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COMMUNICATIONS

TO THE

BOARD OF AGRICULTURE;

ON SUBJECTS RELATIVE TO

THE HUSBANDRY,

AND

INTERNAL IMPROVEMENT

OF THE COUNTRY.

VOL. I.

> Omnium rerum, ex quibus aliquid acquiritur, nihil est agricultura melius, nihil uberius, nihil dulcius, nihil homine libero dignius. Cic. de Offic. i. c. 42.

PARTS I. AND II.

ESTABLISHED 23 AUG. 1793

LONDON:
PRINTED BY W. BULMER AND CO.
FOR GEORGE NICOL, BOOKSELLER TO HIS MAJESTY,
AND TO THE BOARD OF AGRICULTURE;
AND SOLD BY MESSRS. ROBINSON, PATERNOSTER-ROW; J. SEWELL, CORNHILL;
CADELL AND DAVIES, STRAND; W. CREECH, EDINBURGH; AND J. ARCHER, DUBLIN.
1797.

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COMMUNICATIONS

TO THE

BOARD OF AGRICULTURE.

PART I.

ADVERTISEMENT.

This, being the first Specimen, printed by the Board of Agriculture, of the various Communications which it has received, respecting some, of the many important subjects, to which its attention has been directed, it may not be improper, briefly to explain, the design of the work, and the circumstances which have led to its publication.

The first object of the Board undoubtedly was, to ascertain the real situation of the country, and the means of its improvement. With that view, the County Reports were originally set on foot; and as soon as they are completed in a corrected form, the Board will be enabled to lay before Parliament, a General View of the Agricultural State of the Kingdom. It is not improbable, that a special Report of that nature, so far as regards Scotland alone, may soon be ready.

In addition, however, to those local or general Reports, it was extremely desirable, that the vast mass of information and experimental knowledge, which exists in this country, on all agricultural subjects, should be collected, and brought into some regular system. Though that system could not be at once complete, yet it would lead to perfection.* When the foundation of a digested system is once laid, the accumulation of improvement is rapid. But it is necessary to ascertain what is already known, before it is possible to judge what is wanting. It is therefore proposed, to print together in one paper, any communications sent to the Board, on each particular subject; from the consideration of which, a Committee of its Members, may be enabled to form the whole into a regular system.

To exemplify this plan, it may be observed, that several distinct communications, having been transmitted to the Board, on *Farm Buildings*, and the accommodations necessary for the husbandmen; they are now collected together, and printed in Part I. of this publication. From them,—from the information on the same subject contained in the *County Reports*,—from the experience of the Members of the Board,—and the additional communications of its many zealous and public spirited correspondents, joined to the information which might be collected from the numerous volumes already written on topics of that nature, there can be no doubt, that a paper may be drawn up on Farm Buildings, which would probably render any farther discussion, or additional publication on that branch of husbandry, unnecessary.

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* Were all the information which now exists in Great Britain, on agricultural subjects, collected and systematized, there is every reason to believe, that it would approach very near to perfection; some questions regarding manures alone excepted, which the inquiries now going forward, and the experiments recommended by Dr. Fordyce, now about to be tried, will go a great way to determine.

By following the same plan, with regard to other agricultural subjects, the whole, will, in process of time, be so thoroughly investigated, that agriculture will necessarily become, the best understood, and the most accessible, of any art, in the whole circle of human acquirement.

The reader will have the goodness to remember, that the Board is not responsible, for any fact or observation contained in the following papers, as they are printed in the manner in which they were transmitted by their respective authors, unless where different subjects happened to be intermixed in the same communication.

PRELIMINARY OBSERVATIONS

ON THE

ORIGIN OF THE BOARD OF AGRICULTURE,

And its Progress for Three Years after its Establishment.

BY THE PRESIDENT OF THE BOARD.

THE circumstances which led to the Establishment of a Board, so likely to be of material service, both to this country, and to society at large, cannot fail to be interesting, not only to the Members of that Board, but to the Public. It appears, therefore, a duty incumbent on the person by whom that institution was proposed, to draw up a brief account of the various circumstances which contributed to its formation, whilst they continue in his remembrance. To trace the steps whence useful establishments originated, is at all times desirable and useful, but it is, perhaps, necessary on the present occasion, as some have supposed, that the idea of such a Board was borrowed from this or that author, who incidentally might have previously suggested plans of a similar kind. Had it been so, I should have readily acknowledged it; for the difficulty attending such an attempt, is, not to propose a plan, but to carry it into execution.* It may be sufficient, however, to declare, that I knew nothing of such a measure having been recommended by any other individual, previously to its having been proposed by myself. Indeed, from the following narrative, the reader will easily perceive, that such an idea would naturally have occurred to the person who moved it in parliament, independently of any suggestion from others.

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* In modern times, it is impossible to claim any particular merit from such suggestions; for all *Societies* instituted for the improvement of any particular branch of science, are merely extensions of the idea, which was carried into effect, when the Royal Society was instituted in 1662; and all *Boards*, are derived from the Board of Trade, established in the reign of King William.

In the year 1786, I undertook an extensive journey through the northern, and, with respect to useful information, undoubtedly the most interesting part of Europe. The object of that tour was, to obtain political knowledge, to ascertain the state of other countries, and to discover every means, which had been sanctioned by the experience of other nations, that could be successfully introduced for the improvement of Great Britain. In the course of that tour, I became acquainted with the most distinguished authors, the ablest statesmen, and the most zealous patriots, that Europe could then boast of. I returned, full of ardour, to establish, in my own country, all the beneficial institutions which were scattered over others; and to make this island, the centre of the various improvements, of which political society was capable, more especially those of an agricultural nature, to which a person possessed of landed property is naturally partial. But circumstances, on which it is unnecessary now to dwell, having occasioned a coldness with the Minister, I found that any attempt to carry such measures into effect, was not likely to be successful in parliament, and thence was under the disagreeable necessity, of giving up such ideas for a time, and of waiting for a more favourable period to bring them forward.

As, however, in the course of my tour, I necessarily collected a variety of useful hints, and was enabled to ascertain, that much might be effected by the exertions of one man, if uninterruptedly devoted to any particular object;* as in the course of that tour, I found the superior importance of agricultural pursuits, the great character which England had acquired for knowledge in that art, and the expectations which were entertained that it would be peculiarly improved in this country, universally admitted; and as the extent of the tour, and the rapidity with which it was executed, renders it at any rate an event worthy of preservation, I have taken the liberty of annexing in Appendix (A) to these Preliminary Observations, a map drawn up after my return to England, in which that journey was sketched out.

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* It was this circumstance which induced me, from the beginning, to carry on the business of the Board, on a greater scale than otherwise I should have attempted, and which to any other person, not possessed of equal experience in conducting political inquiries, would have been deemed impracticable.

The next circumstance which led to the establishment of this institution, was the following.

In the year 1790, I laid before the public, the second volume of the History of the Public Revenue of the British Empire. I had intended, as appears from the advertisement prefixed to that work, to have concluded it with a chapter on the political circumstances of the country; but after taking every possible pains to become master of the subject, all the information I could obtain, was so extremely defective, that it was necessary to give up the idea; and I then saw the necessity of forming the plan of some institution, for the express purpose of collecting useful political information, the public at large having felt the most serious inconveniences and losses, from information of that nature, not being any where to be obtained.

Soon after the publication of that work, I visited Scotland. It happened to be about the meeting of the General Assembly of the Clergy of that country, of which assembly I was a member,* and with the leaders of which I lived in terms of intimacy and friendship. It fortunately occurred to me, that I might prevail upon that respectable body, to furnish such information, respecting the general state of the northern part of the kingdom, as might enable me to give a sufficient idea of the political situation of that part of the British empire. I was thence induced to begin that extensive undertaking, the Statistical Account of

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* Laymen, under the name of elders, or ruling elders, are admitted members of the clerical judicatures in Scotland; by far the best means of establishing that union so often talked of between church and state.

Scotland, now about to be concluded in 20 volumes octavo. It is a work, concerning which it is only necessary to observe, that towards its completion, NINE HUNDRED individuals of intelligence and ability, have contributed their assistance.

About the time that work commenced, I had occasion to consult with some of the clergy and the proprietors of the Shetland islands, who happened then to be at Edinburgh, respecting the best mode of procuring information from that part of the kingdom, and heard such accounts of the celebrated wool of that country, and received such information respecting the danger to which their flocks were exposed, from an infectious disorder which had got into their islands, that I resolved to bring the state of the sheep and wool of the Shetland islands before the Highland Society. That respectable institution acknowledged the importance of the subject, and gave every possible assistance in prosecuting the necessary inquiries regarding it. But finding that the funds of that Society were too confined, for carrying on any measure on a great scale, for the safety of that sort of sheep, or the improvement of the other breeds in the kingdom, more especially as it had a great variety of other objects to which it was bound to direct its attention, I saw the necessity, of erecting a new institution, for the special purpose of improving British wool; in which attempt I fortunately succeeded.

The business of the British Wool Society, was carried on with considerable energy and success. It would be tedious here to narrate the particulars. They are to be found in Appendix, No. 3. of the corrected Report of Mid-Lothian. In conducting the affairs of that Society, I received additional experience, to that which I had already acquired from the Statistical Account of Scotland, of the many important advantages to be derived, by procuring accurate reports respecting particular districts. The state of the sheep-farming in the northern parts of Scotland, was ascertained in the course of a tour made by Mr. Andrew Kerr, in 1791; and in 1792, some intelligent persons, residing on the borders of the two kingdoms, were sent to survey the manner in which the farmers in England managed their flocks. When the account of their tour was published, I thought it necessary to prefix some ideas on the means of improving British wool in general ; and on that occasion, for the first time, ventured, in the following words, to hint at the establishment of a Board of Agriculture.

" The British Wool Society, by calling the attention of the public, to " the improvement of this important article, have certainly done much ser- " vice to their country. Under their patronage, the greater part of the " island has been surveyed, by persons skilled in the management of sheep, " whose observations they are circulating over the kingdom. They have " established many important facts ; they have proved, that the finest " breeds of Spain, or of England, will thrive in the wildest of the Cheviot " hills, and that very fine woolled breeds may be propagated in the most " mountainous districts of Scotland.—But unless this object is thought wor- " thy of public attention and encouragement,—UNLESS A BOARD OF " AGRICULTURE IS CONSTITUTED, for the sole purpose of super- " intending the improvement of the sheep and wool of the country, and " other objects connected, either with the cultivation or with the pasturage " of the soil, the exertions of any private society must soon slacken, and its " labours become useless and inefficient; whereas, under the protection of " the government of the country, and the superintendance of such a Board, " properly constituted, (more especially if formed of persons, who *gra- " tuitously* devoted their services, to promote such valuable and truly " national interests,) every field would soon be cultivated to the best " advantage, and every species of stock would soon be brought to their " greatest possible perfection."

Fully impressed with the peculiar importance of the institution thus hinted at, and resolved to wait no longer in the expectation of a more favourable period to propose it, I came up to London in December 1792, determined either to succeed in the attempt, or if unsuccessful, to abandon political pursuits, and to devote myself entirely, in future, to the improvement of my own private estate.*

Being at that time in opposition to the Minister, the prospect of succeeding was not very promising. Several incidents, however, which it is unnecessary now to mention, contributed to its success: the assistance of Mr. Secretary Dundas in particular, was extremely material, who, notwithstanding our political differences, was always well disposed to promote any measures I brought forward, which might appear beneficial to the public. The first sum I required was £10,500; but I afterwards found it necessary to reduce it to £5,500, and at last so low as £2,500. The annual income, however, was at last finally settled at £3000. In Appendix B, the reader will find the copy of a printed paper, which was circulated among the Members of the House of Commons previous to the motion coming on, which I have thought it necessary to preserve, it being the first rough sketch of the plan, and the reader might, perhaps, be desirous of comparing it with the future establishment of the Board.

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* I began the attempt with little hopes of success, but with a resolution to try every possible chance of obtaining the object. Little encouragement was given to persevere in it, by those to whom I first mentioned the plan. Mr. Arthur Young in particular assured me, it would be vain to attempt it; and jocosely betted a complete set of his Annals of Agriculture, against another set of my Statistical Account of Scotland, (a natural enough kind of wager between two literary men,) that it would not succeed. Having accidentally informed Mr. Young, in the course of a letter to him, that I had an appointment with Mr. Pitt, to explain to that Minister the advantages of the proposed measure, that he would certainly lose his Annals, and that he ought to send them to the binder's; in his answer, dated 10th January, 1793, he says, "you are going to Mr. Pitt, and I am to lose the wager: when you come from Mr. "Pitt, I shall have won it. Pray don't give ministers more credit than they deserve. In ma-"nufactures and commerce you may bet securely; but they never did, and never will do any "thing for the plough. Your Board of Agriculture will be in the moon. If on earth, remem-"ber I am to be Secretary." I mention this incident, principally with a view of rescuing this active and valuable friend to the agriculture of his country, from an imputation, that he had sacrificed his political principles, for the sake of the emoluments attached to the situation of Secretary to the new Board. In the first place, till the address passed the House of Commons in May 1793, he did not believe that such an institution would ever have taken place; and, in the second place, if such a plan should unexpectedly succeed, he applied for the office in question, not to the Minister, but to a private friend, on whom the nomination of Secretary to his own Board, would necessarily devolve. No member of the administration, indeed, interfered in the nomination of any one of the officers.

It was on the 15th of May, 1793, that the motion for an Address to the Crown, recommending such an institution, was made in Parliament. The substance of the speech made upon the occasion will be found in Appendix (C). The Chancellor of the Exchequer (Mr. Pitt) immediately before I rose, informed me, that he would not oppose the measure, but that his support would depend on what he judged was the sense and feelings of the House upon the occasion; which seemed so decidedly in its favour, that he determined to assist in carrying it through. A few members in opposition, imagining that some deep plot of the Minister's, or some scheme of corruption or influence was at the bottom, resisted it with great vehemence; and from dislike to new schemes, or prejudice against any thing the Government seemed to countenance, would have strangled a measure in its birth, which has already so materially contributed to preserve the nation from the horrors of famine, and will be the means of rapidly increasing its agricultural industry and treasures.* On the first night it was proposed, the House happened to be extremely thin before the business came on, and was actually counted out in consequence of 40 members, (the number necessary when a question is to be determined by a division) not being present. The debate was then adjourned till the 17th of May; and after a discussion, in the course of which many respectable gentlemen spoke in its favour, it was carried, on a division, by a majority of 75; 101 voting for it, and 26 against it. It would be injustice to the Minister not to acknowledge, that all my efforts would have been fruitless, had he not latterly exerted both his influence and his talents in support of the measure.

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* Mr. Sheridan, and some others, who originally opposed it, have since very handsomely expressed their conviction of the utility of the measure, and a wish to see the Board put on a respectable footing.

The motion thus carried, was expressed in the following terms:

" That an humble Address be presented to his Majesty, entreating that " his Majesty would be graciously pleased, to take into his royal consideration, the advantages which might be derived by the public, from the " establishment of a Board of Agriculture, and internal improvement.

" Humbly representing to his Majesty, that though in some particular " districts, improved methods of cultivating the soil are practised, yet " that, in the greatest part of these kingdoms, the principles of agriculture are not yet sufficiently understood, nor are the implements of " husbandry, or the stock of the farmer, brought to that perfection of " which they are capable.

" That his faithful Commons are persuaded, if such an institution " were to take place, that such inquiries might be made into the internal state of the country, and a spirit of improvement so effectually " encouraged, as must naturally tend to produce many important national " benefits, the attainment of which his Majesty has ever shewn a most " gracious disposition to promote; and in particular, that such a measure " might be the means of uniting a judicious system of husbandry, to the " advantages of domestic manufacturing industry, and the benefits of " foreign commerce, and consequently of establishing, on the surest and " best foundations, the prosperity of his kingdoms.

" And if his Majesty shall be pleased to direct the institution of such " a Board, for a limited time, to assure his Majesty, that his faithful " Commons will cheerfully defray any expence attending the same, to " the amount of a sum not exceeding £.3000."

The difficulties, however, attending the formation of such an establishment, instead of being surmounted, had hardly yet begun. I had occasion to make an excursion to Scotland after the motion was carried, but returned in June, full of expectation, that in the space of a few days the Board might be assembled. Yet, though every possible exertion was made, the charter, a copy of which will be found in Appendix (D), was not drawn up, and ultimately sanctioned by the authority of the Great Seal, till the 23d of August; and it was on the 4th of September following, before the Board could be assembled.* The reader will find in Appendix (E), the address that was pronounced on that day; in which the measures recommended to the attention of the new institution, and which have since been pursued, are chalked out. It may not be improper to add, that our regular sittings did not commence till the 23d of January following, only one meeting, for the purpose of constituting the Board, having been held in 1793. Hitherto, therefore, only three sessions have taken place.

By the original plan (see Appendix B), it was proposed, that £.500 per annum should be expended in collecting materials for a Statistical Account of England. Specimens of Parochial Reports, exhibiting the progress of political society, from the pastoral state, to that of luxury and refinement, which were intended to furnish examples of the proper mode of drawing up such accounts, in districts of every description, were actually printed, with a view of being sent to the clergymen of every parish in England, and an address, explaining the nature and principles of statistical philosophy, was prefixed to those specimens, with a view of rousing the Clergy of the Church of England, to an exertion similar to that of their brethren in Scotland. As it is proper to preserve the hints contained in that address, in case such a measure should be resumed, I have inserted both it, and the papers and tables which accompanied it, in Appendix (F). The specimens alluded to, are particularly mentioned in that part of the Appendix, and are to be found in the Statistical Account of Scotland.

But after every measure was thus prepared, for carrying on the Statistical Account of England, with the greatest possible energy and spirit, I found it necessary to alter the plan. The want of the privilege of franking, the impossibility of conveying papers by any other medium but the post, to every parish of the kingdom, and doubts how far the public might at first approve of such inquiries, until they had been accustomed to them, and had felt the benefits to be derived from investigations of that nature, all contributed to decide in favour of *general*, instead of *minute and particular*, inquiries. I was therefore under the necessity of recommending, in the address above alluded to, *County*, instead of *Parochial* Reports. The plan drawn up for the County Reports, will be found in Appendix G ; and in Appendix H, a statement of the manner in which the surveys were arranged. It is singular that such an undertaking should have been attempted by one man,* the Board having delegated to its President the whole charge of those surveys; but it was owing to the following peculiar circumstance—Being possessed of property in the most remote province of this island, (the county of Caithness) where I occasionally reside, I am under the necessity of traversing a great part of the kingdom in my way to and from the metropolis, and must necessarily be acquainted, with a greater variety of individuals, than falls to the lot of almost any other person; and thence I found little difficulty, in nominating persons, capable of giving an account of the husbandry of every part of the kingdom. This was extremely material, in conducting a business, where the improvement of the whole, and not the partial benefit of any particular district, was in contemplation. Besides, a complete view of every part of a kingdom is desirable, because there is no spot in it, which is not entitled to attention, and from which some useful hints may not be obtained.

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* In the course of that tiresome interval, I was often on the brink of giving up the attempt; and nothing but a spirit of perseverance, which could not easily be damped, prevented me from relinquishing it.

In appointing persons for the purpose of drawing up the Surveys in question, I was extremely desirous of having as great a variety as possible, in order that no branch of husbandry might be neglected, and that the subject might be viewed in every possible light. Many of those who were nominated on the occasion having undertaken the task gratuitously, and all of them being satisfied with little more than the bare payment of their expences, the whole charge of collecting the great mass of information contained in the original Reports, has not exceeded the inconsiderable sum of about £.2170. The principal expence was that of printing, it being proposed to give copies of the Reports to every member of the two Houses who applied for them. The number of which, however, having soon increased to 501, namely, 375 Commoners and 126 Peers, the expence amounted to a sum far exceeding the narrow income with which the Board was intrusted, consequently it became necessary to require a subscription of ten guineas from those who wished for the Reports. That the public however may see, how the money given to the Board has been expended, an account of it will be found in Appendix I, so far as it has hitherto been received.

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* The correspondence respecting these surveys was particularly extensive. Several thousand letters were written on the occasion.

With regard to the progress of the institution, after it was thus constituted, it may be sufficient to refer the reader to the Addresses printed in the Appendix, K, L, and M, in which I have endeavoured, briefly to state, the measures which have been taken, in the course of each session. From the perusal of those papers, it will appear, how great a variety of articles were attended to, and how much important business was gone through, within a very limited period.

The original sketches of the County Reports, with only two exceptions, now in the press, are already completed, and even the corrected Reports are at this time in a state of considerable forwardness. But were all the County Reports reprinted, and even the General Report on the Agricultural State of the Kingdom, laid before Parliament, only a small part of the original plan will have been executed. According to that plan, every thing that regarded, not only the Agriculture, but *the internal improvement* of the country, was included in the proposed establishment. The object was, first to collect, and then to condense and systematize, every particle of information respecting any point that could be interesting, either to individuals or to society.* It would not then be difficult, for any set of rulers, to know, how the happiness of the people they governed, could best be secured: nor would it be impossible, in a great measure, to realize, those schemes of public felicity, with the expectation of which, a neighbouring nation has hitherto been amused.

But were it restricted to agriculture alone, its importance to this country, at this time, is hardly to be questioned, more especially as from the magnitude of our debts and expences, an increased, and increasing revenue, is so essentially necessary. When the principles of improved husbandry are once clearly ascertained (which will soon be effected by the exertions of the Board), and when, by wise laws, every obstacle to improvement shall be removed, the farmer will then be enabled to raise, at less expence, a much greater quantity of provisions, and consequently will have it in his power, without injury to himself, to sell them at a lower rate to the public.

The people having thus the necessaries of life cheaper, must be better satisfied with the government under which they live than otherwise they would be, and must have more money to lay out on superfluities, the taxes on which are the principal sources of the public revenue.

Hence, both the peace and quiet of the country, and the resources of the state, depend, upon the progress of our agricultural improvements. By them, the industrious and skilful farmer, instead of being injured, may be enriched, though provisions may be cheap and abundant; whilst the public at large, and the Exchequer in particular, reap all the advantages to be derived from the greater plenty, and consequently from the comparative cheapness of provisions, and, what must prove the necessary result of both, the general prosperity of the nation.

It is on this day precisely three years, since the Board of Agriculture first assembled. The labour which it has since been necessary to undergo, and the difficulties which have since been surmounted, the reader will easily perceive, must have been extremely considerable, in conducting a new and extensive undertaking. I have hitherto been enabled to preside over the business of the Board, with some degree of satisfaction and success, and my utmost ambition is, to see it put in such a train, that it will be almost impossible for any person who may succeed in that situation, to render so valuable an institution, either mischievous, or useless.

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* See Appendix (N), for a farther explanation of the objects of the Board.

I cannot conclude, without offering my best acknowledgments to the many respectable Members, who have assisted me in the management of so important an establishment. To their zeal, exertions, and public spirit, the success of the Board, and the character it has acquired, must be attributed. Whilst they continue to honour it with their support, it cannot fail to prove a blessing to their own country, and an example to others.

JOHN SINCLAIR.

Board of Agriculture,
4th Sept. 1796.

APPENDIX. B.

Plan for establishing a Board of Agriculture and internal Improvement.

Originally printed in May, 1793.

It has long been justly complained of, that, whilst every attention has been paid to *trade*, and every encouragement given to *commercial industry*, Agriculture has been totally neglected; though, at the same time, it is hardly necessary to observe, that manufactures and commerce, are neither so permanent a source of national prosperity, as the proper cultivation of the soil; nor do they furnish occupation to a description of persons, so remarkable for the integrity of their private conduct, so little inclined to disturb the peace and good order of society, or so able to defend their country, by their personal vigour and strength, as the farmer and the husbandman.

It may be said, that public attention and encouragement can be of no service to agriculture. But in the first place it is to be hoped, that any idea of that kind will not be given way to, until the experiment is fairly tried: in the second place, no ground should be given to the farmer, to imagine, that his interests are neglected, or his profession despised: and in the third place, there is every reason to believe, that public countenance at least, instead of being useless, cannot fail to be attended with the happiest consequences in promoting Agricultural Improvement.

There are three points on which the prosperity of Agriculture must depend. 1. Upon giving the farmer an opportunity of acquiring, with as little trouble and expence as possible, full information respecting the best and most advantageous methods of managing his farm. 2. Upon exciting a spirit of industry and experiment among that description of men. 3. Upon the farmer having a sufficient capital or credit to carry on his operations. With the last it is impossible that the public can have any connexion:* but in regard to the two first points, it is evident that Government may, at a small expence, give the farmer all the information that is necessary; and, either by honorary rewards, or even by giving every active and intelligent cultivator an opportunity of corresponding with a respectable public board, on subjects connected with his pursuits, may make Agriculture so much a topic of conversation among that class of men, may turn their attention so much to the improvement of the soil, and may excite such an ardour for that purpose, that the happiest consequences may be expected, both to the individuals engaged in that particular profession, and to the kingdom at large.

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* By the farmer, in the above paragraph, is meant *the mere husbandman*, who has only occasion for small sums, and whose security cannot always be depended on. In regard to lending money to the landed interest, in large sums, for which their property might be made responsible, the case is different. In the history of the public revenue, part II. p. 126. originally printed in 1785, I have hinted at the wonderful advantages which might be derived, by expending the surplus of the public revenue, in promoting agricultural improvement. Probably a better use for a sinking fund than any other mode of application. By lending the produce of the sinking fund, on landed security, for the improvement of the country, the public would not only accumulate as great an additional annual income, as by purchasing 3 per cent. stock, but would also acquire a great revenue, from the rapid increase of national prosperity, by which the produce of the taxes, on consumption at least, would be greatly augmented.

It is on these principles, that Sir John Sinclair takes the liberty of suggesting, the following plan of a Board of Agriculture. His original idea was, to restrict it to the melioration of British wool alone; but he is now satisfied, that with much the same trouble, and at nearly the same expence, the same Board may successfully direct its attention, to every point connected with the internal improvement of the country.

PLAN OF THE BOARD.

It is proposed that the Board shall consist of twenty-four members, in the same manner as the present Board of Trade,* but not to be restricted to members of his Majesty's Privy Council, as the President of the Royal Society, and other persons, who are not in either House of Parliament, may be useful members. The advantages of a great number of members are, first, that it totally precludes every possible idea of giving salaries to the Board, which would not answer any real purpose of utility, and would at the same time make the institution expensive. Secondly, it would give occupation of a public nature to many respectable individuals, both in and out of Parliament, who are anxious to be employed in public business, but who at present have no particular object, to which they can direct their attention.

The expence of such a Board may be estimated at about £3,000 per annum, to be laid out in the following manner.

	per annum. £.	s.	d.
1. Expence of the house, a secretary and two clerks (for the correspondence will be very extensive), may be stated at -	500	0	0
2. Stationary may amount to - - -	200	0	0
3. Foreign correspondence respecting the Agriculture of other countries, procuring foreign books on Agriculture, seeds, animals, and implements of husbandry - - - -	300	0	0
4. The expence of sending persons to make regular annual surveys of the state of agriculture and sheep-farming, all over the kingdom, for the purpose of establishing correspondence, of ascertaining what improvements have been made, in different parts of the country, the principal defects of each district in the management of their farms, &c.	500	0	0
4. The expence of printing and circulating those surveys, and other works that may be published under the sanction of the Board, together with honorary rewards to corresponding members, who try, in different parts of the country, such experiments, for the improvement of wool, &c. as may be recommended by the Board. -	500	0	0
Carry over	£2000	0	0

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* With, however, an unlimited number of *corresponding members.*

	per annum.
Brought over -	£2000 0 0
6. The expence of collecting the materials of a Statistical Survey of England, to be carried on under the sanction of the Board of Agriculture. - - -	500 0 0
7. Incidental expences - - -	500 0 0
	£3000 0 0

The above sum, it is believed, will be found adequate to the purposes in view; and in order to obviate every possible objection on the score of expence, it is proposed to establish such a Board for five years only, merely by way of experiment; to be afterwards continued, in the event alone of its answering the important objects for which it was constituted. It was at first intended to propose some additional expence to be laid out in premiums; but upon farther consideration, it was judged more advisable, to leave the giving of *money* in premiums to private societies, and to restrict the donations of a public board, to honorary rewards.

That the public ought not to grudge such a sum for so necessary a purpose, need hardly be long dwelt upon. For objects of general utility, Parliament has often, and ought always to exert itself. The Board of Trade is necessarily attended with some expence. The Royal Society had, from its commencement, a grant of land from the crown. The Board of Longitude has had various considerable sums laid out as premiums, under its authority, for rewarding such as have made any important discovery in the point to which its attention is directed. The culture of flax has been encouraged by public bounties. And where is the object so well entitled to national countenance and support, as that of promoting the general interests of Agriculture, and of ascertaining the best means of bringing it to perfection?

The advantages of such a Board are obvious.

I. It is well known that there are many societies for the improvement of agriculture, in all its various branches, already scattered over the kingdom: and many more would probably be established, were Parliament to sanction the objects of such societies by its approbation. The establishment of such a board, there is reason to believe, would be of incredible service in keeping up the spirit of such institutions, in giving them a proper direction, and in procuring for them more weight and consequence in those parts of the country where they exist. Besides, at present, any improvements made by such societies, are only known within their own narrow sphere: whereas they might be rapidly spread over the whole kingdom, through the medium of a Board of Agriculture, with whom every one of them would be desirous of corresponding.

II. In regard to the idea, that the whole had better be carried on by a private society, it is to be observed that *no private society* can ever have the same weight, either with the farmer at home, or with foreign countries (from which undoubtedly much information may be obtained), as *a public institution.* In the second place, no private society, could be intrusted, like a public board, with a power of receiving and transmitting letters, and even pacquets, duty free, without which, at the same time, it could not be of general benefit; for it is only by frequently dispersing small tracts, and not voluminous publications, that the farmer can best be instructed, and roused to activity and exertion. In the third place, a public board may easily collect into one focus, all the knowledge and information that may be acquired by a great number of small societies scattered over the kingdom ; may make them useful to each other, and mutually co-operate for the general benefit of the country ; but that is a degree of authority, which no private society, however constituted, could possibly acquire.

III. It is now found that an union of husbandry and sheep-farming is the best means of bringing agriculture to perfection ; whilst at the same time it furnishes the raw material for our most valuable manufacture. By carrying the improvement of our wool, both in regard to quantity and quality, as far as the soil and climate of Great Britain will admit of (which, if such a Board were established, might be done in the space of a few years), there is every reason to believe, that three millions per annum, in manufactured articles, will be added to the national wealth, in addition to the benefit which the soil will receive from an improved system of husbandry.*

IV. But the part of the plan from which the greatest and most important benefits are to be expected, is that of carrying on a Statistical Survey of England, for the purpose of ascertaining, the real political situation of that part of the kingdom, in every point of view, respecting which a statesman would wish to have information. In the short period of about three years, such a survey of Scotland will be completed, by the voluntary exertions of the Clergy of North Britain ; and in the space of five years, a similar survey of England, may be brought to a conclusion. The object of such a survey would be, to ascertain the general state of the Agriculture, the Manufactures, and the Commerce of the country—the means of improvement of which they are respectively capable ; the amount of the population of the state, and the causes of its increase or decrease : the manner in which the territory of the country is possessed and cultivated ; the nature and amount of the various productions of the soil ; the value of the personal wealth or stock of the inhabitants, and how it can be augmented ; the diseases to which the people are subject, their causes, and their cure ; the occupations of the people—where they are intitled to encouragement, and where they ought to be suppressed ; the condition of the poor—the best mode of maintaining them, and of giving them employment ; the state of schools, and other institutions formed for purposes of public utility ; the state of the villages, and of the towns in the kingdom, and the regulations best calculated for their police and good government ; and lastly, the state of the manners, and morals, and the general character of the people, and the articles in regard to which, their situation is most capable of melioration and improvement.

To conclude, it is only by means of such inquiries, that any society can possibly expect to enjoy all that political happiness to which it must naturally aspire. By ascertaining facts with minuteness and accuracy, the real state of the country must be made known, and the means of its future improvement will be pointed out. Every field, it may be expected, will then be cultivated to the best advantage, and every measure will be taken, that can best tend to promote the general interests of the community.

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* There are, at the smallest computation, twenty millions of sheep in Great Britain, whose fleeces may be increased in value to the amount of a shilling each, either by augmenting the quantity or improving the quality of their wool. The increased value of the wool, therefore, would amount to one million, which would be trebled by the art of the manufacturer, and consequently would produce three millions. To this there is to be added, the benefits that would result from the introduction of sheep-farming into different parts of the country, which are better calculated for sheep than for cattle ; the superior advantages of which, would soon decisively appear, from the inquiries carried on by the Board now proposed to be established.

APPENDIX. C.

Substance of Sir John Sinclair's *Speech in Parliament, on the 15th of May,* 1793, *when he proposed the Establishment of a Board of Agriculture.*

Sir John Sinclair began with stating, that having been much occupied of late, in the duties of a new and laborious employment, connected with the preservation of the commercial credit of the country (*that of commissioner for the issue of certain exchequer bills),* he had unfortunately been induced to delay, from time to time, arranging his thoughts, and the information he had collected, on a subject of so very different a nature, as that of husbandry; and consequently was not prepared, to state his sentiments upon the question, to which he now begged to call the attention of the House, so fully as he could have wished: such a circumstance, however, was of less importance, as it was surely unnecessary in that House to descant upon the various public advantages to be derived from agricultural industry, or to attempt to prove, that it was the surest and best basis of national prosperity. These were principles which few thinking and intelligent men were disposed to resist. But an opinion had very much prevailed, that the interference of government, in matters of that nature, had an injurious tendency; that it was the wisest plan to leave them entirely to themselves; and that any public aid or countenance was totally unnecessary.

No position, however, could be more erroneous. If the public were to *dictate* to the farmer how he was to cultivate his grounds, or how he was to improve his stock, the enforcing of such directions, might be the source of infinite mischief; but to collect information on the subject of agriculture; to print and circulate that information, when collected; to encourage a spirit of experiment; and to favour with public countenance, and perhaps with public aid, such as shewed a good example of rural industry to their neighbours, instead of being mischievous, must be attended with the happiest consequences; and though, in some parts of the kingdom, the principles of agriculture unquestionably were well understood, and the ground was kept in a very high state of cultivation, yet when it was considered—that immense districts, situated in the richest parts of England, and naturally fertile, still continued waste and useless—that a very small proportion of the cultivated part of the kingdom had as yet been brought under a proper system of husbandry—that any degree of perfection in the implements of husbandry had been rarely attained—and that the stock of the farmer, had been still more rarely brought to that height of improvement, of which it was capable, it was surely a matter of surprise, whence it arose, that a measure of so important a nature as the present, embracing such a variety of interesting objects, had not been sooner brought under the consideration of parliament. "We had heard much, he observed, of other sources of national prosperity, but we seem to forget that no nation could be permanently happy and powerful, that did not unite a judicious system of agriculture, to the advantages of domestic manufacturing industry, and to the benefits of foreign commerce."

The great advantages to be derived from agricultural improvements, might, he said, be stated in various points of view.

It is supposed that there are sixty-seven millions of acres in Great Britain, of which seven millions are occupied with houses, roads, rivers, lakes, &c. or by nature are totally incapable of cultivation; there remained therefore sixty millions; five millions of which only were employed in raising grain, twenty-five millions were appropriated to pasturage, and might be considered as sufficiently productive, and there remained thirty millions, either completely waste, or under a very defective system of husbandry. That was an object, in every point of view, of astonishing value and importance. Disgraceful indeed it was, that nearly one half of the kingdom, which, by fair calculation, might furnish subsistence to above ten millions of people, should remain in such a state.

The stock of the farmer, he observed, might be rendered infinitely more valuable than at present, without requiring a greater quantity of food, or any additional care or expence.

Of black cattle it is supposed that there are five millions in the island. As the breed of cattle has not been brought to any great perfection, except in particular districts, an addition of a pound sterling to the value of each, would not probably be found too high an estimate, though this would add five millions per annum to the national wealth.

There are at least twenty millions of sheep in these kingdoms, which might be greatly improved in regard both to fleece and carcass. On the supposition, however (in some cases, by increasing the quantity; in others, by improving the quality of the fleece, leaving the carcass, for the present, out of the question), that one shilling was added to the value of the wool of each sheep, the result would be one million sterling. The manufacturer of wool, it is well-known, can treble the value of the raw material, and consequently there would thence arise an addition of three millions per annum to the wealth of the nation. The profit that would arise by improving the carcass, in the opinion of the ablest breeders, would be still more considerable.

Great improvements might also be made in other kinds of stock. Great savings would arise by the use of improved implements of husbandry, whilst by following judicious systems, adapted to the different soils in the kingdom, ground would be cultivated at much less expence, and with a greater prospect of advantage. In addition to all which, it is to be considered, that these improvements would furnish the means of useful and healthful occupations to many thousands, almost millions of people, who, from the integrity of their private conduct, and the strength and vigour of their constitutions, are undoubtedly that description of persons, whom it is natural to wish should, as much possible, be multiplied in these kingdoms.

For the purpose of securing all these advantages, and in order to direct the attention of the people of this country to improvements of a nature so beneficial and so permanent, he was perperfectly satisfied, that the establishment of a national Board of Agriculture, was absolutely necessary.

The advantages of such a Board were obvious.

In the first place, it might be considered as a general magazine for agricultural knowledge, and a board of reference, to which any question might be sent, connected with the improvement of the country. At present, government had no channel for obtaining information, respecting many points, in which the general interests of the country were deeply involved. Questions respecting commerce were referred to a Board of Trade, constituted for that express purpose; but no channel as yet existed for obtaining authentic information respecting the agriculture of the country, though undoubtedly of more general importance.

In the second place, by agricultural surveys, carried on under the auspices of such a Board, every fact or observation known in this country, connected with the improvement of the soil, or the stock it maintained, would soon be collected. The circulating of that information could not fail to be attended with the happiest consequences. The discoveries of one district, would be immediately communicated to another; a spirit of experiment would be excited; and every farmer in the kingdom would contribute his mite to the general benefit of his profession.

In the third place, by establishing an extensive foreign correspondence, no improvement or discovery could be made in husbandry, in any quarter of the globe, that would not be immediately made known, and communicated to the people of this country, with much greater speed, and to greater advantage, than if private exertion and correspondence were alone to be depended on.

In the fourth place, a public board might be entrusted with the privilege of franking, a point of very great importance, for without that privilege, it is well known that no information, however useful, except at an enormous expence, could be rapidly spread over the country. That was a privilege with which no private society could be invested, but to which a public body had the justest pretensions.

In the fifth place, it was only through the medium of such a Board, that any general improvement of stock could be looked for. Such improvement, however desirable, could not always be effected without concentrating the knowledge of a great number of individuals of different professions. In regard to sheep, for instance, the breeder, the grazier, the manufacturer of wool, the butcher, the currier, and the consumer, must all be satisfied, that a change in the breed of any particular district is calculated for their respective interests. So great an alteration in the opinions and the prejudices of great numbers of individuals, could only be effected by the authority and influence of a public board, and far surpassed the exertions of any body of private men, however active or respectable.

In the last place, such a Board might be the means of obtaining a Statistical Account of England; and consequently of explaining the real situation of the country, in every point of view, that could possibly be wished for by a patriot or a statesman. Such an account of Scotland was already nearly completed, and specimens of it having been circulated abroad, it had received the most flattering marks of approbation. If in England, therefore, the same plan were executed, it would hardly be doubted that it would soon be universally adopted in every other country; and thus the principles of political society, and the sources of national improvement, would be more completely ascertained, than in any former period of history.

That such was the natural tendency in the mind of man, to startle at any new proposal, that he certainly would not have ventured to have made such a motion in Parliament, had he not every reason to believe, *from much experience in undertakings of a similar nature*, that it could not fail to be successful; and, in order to satisfy the most timid and scrupulous, he intended to propose, that the expence should not exceed £3000. per annum, and that the experiment should only be tried for the short period of five years; at the conclusion of which, however, he trusted, that the advantages of the institution would be so clear and manifest, that he would be a bold and hardy man indeed who would oppose its being continued. It was also intended, that the members of the Board should act without any emolument whatever. He added, "that such as had witnessed the laborious exertions of those gentlemen, who were nominated to the important trust of preserving the commercial credit of the country, would not hesitate to declare, that the business of a board, who have no salaries annexed to their situations, may be ably and faithfully administered."

That the mention of the Board above alluded to, would justify the observation, that if at any time attention to agriculture was necessary, the present undoubtedly was the moment; when the hazardous state of commercial enterprizes, was so clearly demonstrated, and when it has become necessary to think how to furnish the means of subsistence to a multitude of individuals, who, in consequence of the late failures of a mercantile and manufacturing nature, have been driven from their usual sources of employment.

That when persons talked with raptures of the great wealth brought into this country by commerce, they did not consider, that the nation, in many cases, lost as much by neglecting agriculture as they gained by commerce; of which a stronger instance could not be given than this—that in the northern parts of England, in the course of last harvest (1792) grain to a very considerable amount, actually perished, for the want of labourers to gather in the crop, all the hands in the neighbourhood being employed in carrying on manufactures. It was evidently of little consequence, gaining in one respect, if in another, a loss was sustained, of equal, or perhaps of superior importance.

That an ancient author (Pliny) had happily described the natural sources of the wealth of this country, and his sentiments on that subject, in the nervous translation of that great political writer, Harrington, in his *Oceana*, could not be too frequently recalled to the attention of the people of Great Britain. "O! most blessed and fortunate of all countries, Britannia! How "deservedly has nature, with the blessings of heaven and earth, endued thee! Thy ever fruitful "womb, is not closed with ice, nor dissolved by the raging star. Thy woods are not the harbour "of devouring beasts, nor thy continual verdure the ambush of serpents, but the food of innumerable herds and flocks, presenting thee, their shepherdess, with distended dugs or golden "fleeces." Such was the opinion of an intelligent author, who wrote so many centuries ago. "Let me ask," he said, "whether the distended dugs, and golden fleeces of the country, are "not still among the principal characteristics of British wealth?"

That the objections to such a proposal (if any could be seriously urged) it was unnecessary to anticipate. It was one of those measures, it might be said, which, if it produced no good, could not possibly do any harm, but which he viewed in so different a light, that he had no hesitation in pledging any little credit he might have in the House, that it would be the source of as much real benefit to the country, as any proposition that ever was brought under the consideration of Parliament.

On these grounds he took the liberty of moving, " that an humble Address be presented to his Majesty, intreating that his Majesty would be graciously pleased, to take into his Royal consideration the advantages which might be derived, by the public, from the establishment of a Board of Agriculture and Internal Improvement, &c. &c."

APPENDIX. D.

The Charter of the Board of Agriculture.

George the Third by the grace of God, King of Great Britain, France, and Ireland, Defender of the faith, and so forth, to all to whom these presents shall come greeting. Whereas it appears to us, that great advantages may be derived from the establishment of a Board, Society, or body corporate, for the Encouragement of Agriculture and Internal Improvement, know ye, therefore, that we, of our especial grace, certain knowledge, and mere motion, have ordained, given, and granted, and by these presents, for us, our heirs, and successors, do ordain, give, and grant, that there shall be, for ever hereafter, a Board or Society, which shall be called by the name of the Board or Society for the Encouragement of Agriculture and Internal Improvement; of which Board or Society we do hereby declare ourselves to be the Founder and Patron. And that the said Board or Society shall consist of a President, and of a certain number of Members, to be hereinafter mentioned; who, by the name of the Board or Society for the Encouragement of Agriculture and Internal Improvement, shall for ever hereafter be a body politic and corporate, in deed and in law; and shall by the said name and style have perpetual succession; and that they and their successors, by that name, shall and may, for ever hereafter, be enabled and rendered capable, and have power, notwithstanding the statutes of mortmain, to have, purchase, take, acquire, receive, possess, enjoy, and hold to them and their successors, manors, messuages, lands, rents, tenements, annuities, hereditaments, liberties, franchises, jurisdictions, goods, and chattels, of whatsoever nature or kind, in fee, and perpetuity, or for terms of life, or years, or otherwise; and all manner of goods, chattels, and things whatsoever, of what nature soever. And we do for us, our heirs, and successors, hereby give and grant unto the said Board or Society, and their successors, by the name aforesaid, our especial licence, full power, and lawful and absolute authority, to hold and enjoy manors, messuages, lands, tenements, and hereditaments, whatsoever, which may be hereafter devised, granted, or sold to the said Society; and also to purchase, hold, receive, and possess, in mortmain, in perpetuity, or otherwise, to, or to the use of, or in trust for them, or their successors, for the use and benefit of the said corporation, from any person or persons, bodies politic or corporate, their heirs and successors, respectively, such manors, lands, tenements, rents, or hereditaments, as they shall think fit to purchase, or shall be given, granted, devised, or conveyed to them, by deed or otherwise, not exceeding the yearly value of ten thousand pounds, over and above all charges and reprizes, so far as they are not restrained by law. And also to sell, grant, demise, exchange, and dispose of any of the same manors, messuages, lands, tenements, and hereditaments, whereof or wherein they shall have any estate of inheritance, or for life or lives, or years, as aforesaid. And that it shall and may be lawful for any person or persons, bodies politic or corporate, their heirs and successors respectively, to give, grant, sell, alien, assign, devise, bequeath, or dispose of, in mortmain, in perpetuity, or otherwise, to, or to the use and benefit of, or in trust for, the said Board or Society, any manors, messuages, lands, rents, tenements, annuities, and hereditaments whatsoever, not exceeding the yearly value of ten thousand pounds in the whole, above all charges and reprizes, in any manner not repugnant to, or made void by, the statute, passed in the ninth year of the reign of our late royal grandfather, King George the Second, intitled, "An Act to restrain the Disposition of lands, whereby the same become unalienable." And also any sum or sums of money, goods, and chattels, whatsoever, of what nature or value soever, in any manner not repugnant or made void as aforesaid. And we do further, for us, our heirs and successors, grant, that the said Board or Society, and their successors, by the name aforesaid, shall and may be capable to sue and be sued, plead and be impleaded, answer and be answered unto, defend and be defended, in all courts and places whatsoever, of us, our heirs and successors, before any of our judges and justices, and other officers of us, our heirs and successors, in all and singular actions, suits, plaints, causes, matters, demands, and things whatsoever; and to act and do in all matters and things relating to the said Board or Society, in as ample manner and form as any other our liege subjects, being persons able and capable in the law, or any other body politic or corporate, in this part of our kingdom of Great Britain called England, lawfully may or can act, or do, sue or be sued, plead or be impleaded, answer or be answered unto, defend or be defended. And that the said Board or Society, for ever hereafter, shall and may have and use a common seal, for the causes and businesses of them and their successors; and that it shall and may be lawful for them and their successors, to change, break, alter, and make new, the said seal, from time to time, as they shall think fit. And that our royal intention may take the better effect, we do hereby, further, for us, our heirs and successors, grant and declare, that the said Board or Society, in all times hereafter, shall consist of a President, of such several Members by virtue of their several offices, as hereinafter mentioned, and of thirty ordinary Members: and that the said Board or Society shall have full power and authority to nominate and appoint such, and so many, honorary Members as to them shall seem meet: which said honorary Members shall have a right to be present at all deliberations of the said Board or Society; but shall not have the power of voting in any question to be agitated thereat: and further, that the said Board, or Society, shall and may have full power and authority, to nominate and appoint such a number of corresponding members, whether natives or foreigners, as may seem best adapted for carrying the objects of the said institution into full effect; but which corresponding members shall have no right of voting in any question to be agitated before the said Board or Society; nor any right of being present at the deliberations thereof. And for the better execution of this our royal grant, we have nominated, constituted, and appointed, and by these presents do nominate, constitute, and appoint, our trusty and well beloved Sir John Sinclair, Baronet, to be an ordinary member of the said Board or Society, and to be the first and modern President thereof; to continue in the said office from the date of these our letters patent, to the twenty-fifth day of March, one thousand seven hundred and ninety-four, and until another person, of the said Board or Society, shall be duly chosen and admitted into the said office in his room, in manner hereinafter mentioned. And we do hereby further nominate, constitute, and appoint the most Reverend Father in God, our right trusty and right entirely beloved councillor, John, Lord Arch Bishop of Canterbury, and the Arch Bishop of Canterbury for the time being; our right trusty and well beloved councillor, Alexander, Lord Loughborough, our Lord High Chancellor of Great Britain, and our Lord High Chancellor of Great Britain, or the Lord Keeper of the Great Seal for the time being; the most Reverend Father in God, our right trusty and right entirely beloved councillor, William, Lord Arch Bishop of York, and the Arch Bishop of York for the time being; our right trusty and right well beloved cousin and councillor, Charles, Earl Camden, Lord President of our Council, and the Lord President of our Council for the time being; our right trusty and entirely beloved cousin and councillor, Granville Levison, Marquis of Stafford, Knight of the most noble order of the Garter, Lord Keeper of our Privy Seal, and the Lord Keeper of our Privy Seal for the time being; our right trusty and well beloved councillor, William Pitt, Esquire, First Commissioner of our Treasury, and the First Commissioner of our Treasury for the time being, in the vacancy of the office of the Lord High Treasurer, and the Lord High Treasurer for the time being; our right trusty and right well beloved cousin and councillor, John, Earl of Chatham, First Lord Commissioner of the Admiralty, and the First Lord Commissioner of the Admiralty for the time being, in the vacancy of the office of Lord High Admiral, and the Lord High Admiral for the time being; the Right Reverend Father in God, our right trusty and well beloved councillor, Beilby, Bishop of London, and the Bishop of London for the time being; the Right Reverend Father in God, our right trusty and well beloved Shute, Bishop of Durham, and the Bishop of Durham for the time being; our right trusty and well beloved councillors, William Wyndham, Baron Grenville, and Henry Dundas, Esquire, our two principal Secretaries of State, and the two principal Secretaries of State for the time being; our right trusty and right entirely beloved cousin and councillor, Charles, Duke of Richmond, Knight of the most noble order of the Garter, Master General of our Ordnance, and the Master General of our Ordnance for the time being; our right trusty and well beloved councillor, Henry Addington, Esquire, Speaker of the House of Commons, and the Speaker of the House of Commons for the time being; our trusty and well beloved Sir Joseph Banks, Baronet, President of the Royal Society, and the President of the Royal Society for the time being; our trusty and well beloved John Robinson, Esquire, surveyor general of our woods and forests, and the surveyor general of our woods and forests for the time being; and John Fordyce, Esquire, surveyor of the crown lands, and the surveyor of the crown lands for the time being; to be now, and in all times coming, by virtue of their several offices, and so long as they shall hold the same respectively, members of the said Board or Society. And we do hereby further nominate, constitute, and appoint, our right trusty and right entirely beloved cousin and councillor, Augustus Henry, Duke of Grafton; our right trusty and right entirely beloved cousins, Francis, Duke of Bedford; and Henry, Duke of Buccleugh, Knight of the most ancient order of the Thistle; our right trusty and entirely beloved cousin and councillor, Thomas, Marquis of Bath, Knight of the most noble order of the Garter; our right trusty and right well beloved cousin, George, Earl of Winchelsea; and James, Earl of Hopetoun; William, Earl Fitzwilliam; George Wyndham, Earl of Egremont; James, Earl of Lonsdale; Francis, Earl of Moira, in our kingdom of Ireland; and John Joshua, Earl of Carysfort, of our said kingdom, Knight of the illustrious order of Saint Patrick; the Right Reverend Father in God, our right trusty and well beloved Richard, Bishop of Landaff; our right trusty and well beloved Martin Bladen, Lord Hawke; Edward, Lord Clive, of our kingdom of Ireland; and John Baker, Lord Sheffield, of our said kingdom; our right trusty and well beloved councillor, William Wyndham, Esquire; our trusty and well beloved Charles Marsham, Esquire; Sir Charles Morgan, Baronet; William Pulteney, Thomas William Coke, Thomas Powys, Henry Duncombe, Edward Loveden Loveden, John Southey Somerville, Robert Barclay, Robert Smith, George Sumner, John Conyers, Christopher Willoughby, and William Geary, Esquires, to be the first and modern ordinary members of the said Board or Society; to be continued ordinary members of the said Board or Society, from the date of these our letters patent, to the twenty-fifth day of March next following; and from thence, until other fit persons shall be chosen to be members in their stead, respectively, in the manner and at the periods hereinafter mentioned, if they shall so long respectively live, and shall not be removed for some just and reasonable cause, in manner hereinafter mentioned. And the said members and their successors shall, at all times, be aiding, advising, and assisting in all affairs, businesses, and things, concerning the better regulation, government, and direction of the said Board or Society. And we will and ordain, and for us, our heirs and successors, do hereby further grant to the said Board or Society, and their successors, that they, or any seven or more of them, who shall assemble for that purpose, of which the President or his deputy shall always be one, may, on the said twenty-fifth day of March next, and so yearly and every year, on the said day, or as near to the same as may conveniently be, nominate and choose one of the ordinary members of the said Board or Society for the time being, to be President thereof, until the twenty-fifth day of March next ensuing; and from thence until another be chosen and admitted into the said office in his room. And in case the President of the said Board or Society shall, during the continuance of his said office, happen to die or be removed (which President, for misdemeanors, or other reasonable cause, is hereby declared to be amoveable by the rest of the said members, or the major part of them) that then and so often, it shall and may be lawful for the members of the said Board or Society, or any seven or more of them, to meet within fifteen days after such death or removal, and to choose one of the said ordinary members to be President of the said Board or Society; and that the person so chosen by the majority of the said seven, or more, of the members of the said Board or Society, shall be President of the said Board or Society, and continue in that office until the twenty-fifth day of March, then next following, and until another shall be duly elected and admitted into the said office in his room. And that in case any one or more of the ordinary members of the said Board or Society shall happen to die or be removed, which ordinary members, or any of them, for misdemeanors or other reasonable cause, are hereby declared to be amoveable by the President and rest of the said members, or the major part of them, that then, and so often, it shall be lawful for the President and members aforesaid, or any seven or more of them, (of which the President or his deputy always to be one) to choose one or more of the honorary members of the said Board or

Society, in the room of him or them so deceasing or removed, to complete the number of the said ordinary members; and that the person or persons so chosen and admitted, shall continue to be an ordinary member, or ordinary members, of the said Board or Society, until the twenty-fifth day of March then next ensuing, and until other person or persons shall be duly chosen and admitted in his or their room respectively. And we do hereby further for us, our heirs and successors, give and grant unto the said Board or Society, that they and their successors, for ever, or any five or more of them, (whereof the President for the time being, or his deputy, shall always be one) shall and may, yearly, upon the said twenty-fifth day of March, or as near the same as conveniently may be, choose and nominate five of the honorary members of the said Board or Society, to supply the places of five of the aforesaid ordinary members of the said Board or Society, it being our Royal will and pleasure, that five, and no more, of the ordinary members aforesaid, should yearly be changed, at every such annual election. And we do hereby for us, our heirs and successors, further grant to the said Board or Society, and to their successors, that whereas the President of the same for the time being, may happen to be sick, indisposed, or be otherwise employed, so that he cannot attend the business of the said Board or Society, it shall be lawful for the said President, at his pleasure, to nominate, at the same time, or at different times, four persons of the ordinary members of the said Board or Society, for the time being, to be his deputy or deputies; one of which, the senior in nomination, who shall be present, or in readiness, shall, in the absence of the President, be empowered, and is hereby empowered, to supply the place of the President, and to do all acts concerning the Board or Society, and the business of the same, which the President, by virtue of his said office, might do, if he were himself actually present; and that every person, so nominated by the President for one of his deputies, shall continue in the said office, all the time that the said President shall himself continue in his office of President, unless such person shall be removed by the President from the said office, or be rendered incapable of holding the same, by ceasing to be a member of the said Board or Society. And further, we do hereby for us, our heirs and successors, give and grant to the said Board or Society, and their successors, that they shall and may have one Treasurer, one Secretary, two or more Surveyors for examining into the state of the Husbandry in these our kingdoms, and one Under-secretary, and one or more Clerk or Clerks, together with such agents and other officers as may be necessary and useful to the said Board or Society. And we do hereby nominate and appoint or trusty and well beloved Sir John Call, Baronet, to be the first and modern Treasurer; and our trusty and well beloved Arthur Young, Esquire, to be the first and modern Secretary of the said Board or Society, each of them respectively to be continued in their respective offices to the twenty-fifth day of March next following the day of the date of these presents. And we do hereby for us, our heirs and successors, authorise and empower the said Board or Society, and their successors, from time to time, for ever hereafter, yearly and every year, on the said twenty-fifth day of March, or as near the same as conveniently may be, to nominate and choose honest and discreet men for treasurer and secretary; and in case any of them, the aforesaid officers of the said Board or Society, shall happen to die, or be removed from their respective offices, then and so often, it shall and may be lawful to and for the said Board or Society, and their successors, to elect and choose one or more into the office or offices which shall so become vacant, to continue therein during the residue of that year, and until others shall be duly chosen in their respective place or places. And we do further, for us, our heirs and successors, hereby give and grant to the said Board or Society, full power and authority to erect and build any house, college, or hall, within the city of London, or within ten miles thereof; and in the same, or in any other house, college, hall, or other convenient place, in London, or within ten miles thereof, to assemble and meet together, as the said President shall appoint, by summons or other notice, which he is, by these presents, empowered and required timely to issue for that purpose, to all the said members; and that they, being so met together, shall have full power and authority, from time to time, to make, constitute, and establish such and so many statutes, rules, orders, bye-laws, and ordinances, as shall appear to them to be good, useful, honest, and necessary, for the government, order, and regulation of the said Board or Society, and every member thereof; and to do all things else concerning the government, estate, goods, lands, revenues, and other businesses and affairs of the said Board or Society: All which laws, statutes, and ordinances so made, we do hereby will and command, shall and may be, from time to time, inviolably observed and kept, according to the tenour and effect thereof, so as the same be just, honest, and reasonable, and no ways repugnant or contrary to the laws of this our realm. And we do hereby, for us, our heirs and successors, further give and grant unto the said Board or Society, and their successors, full power and authority, from time to time, to elect and choose one or more printers and gravers, and by writings sealed with the common seal of the said Board or Society, and signed by the President for the time being, to grant unto them power to print such things, matters, and businesses, concerning the said Board or Society, as shall from time to time be committed to them, and for promoting such experiments and inquiries as the said Board or Society may be employed in. We do further for us, our heirs, and successors, give and grant unto the said Board or Society, and their successors, from time to time, by letters under the hand of the President of the said Board or Society, or his deputy, to hold correspondence and intelligence with any strangers, whether private persons or collegiate societies, or corporations, without any interruption or molestation whatsoever: Provided always, that this our indulgence or grant be extended to no further use, than the particular benefit and interest of the said Board or Society, in matters connected with the objects of this institution, and be not contrary to law. And we do hereby strictly charge and command all justices, mayors, aldermen, sheriffs, bailiffs, constables, and all other officers, ministers, and subjects whatsoever, of us, our heirs, and successors, to be, from time to time, aiding and assisting unto the said Board or Society, in and about all things, according to the true intent and meaning of these our letters patent. And lastly, we will, and by these presents, for us, our heirs, and successors, do grant to the said Board or Society, and their successors, that these our letters patent, or the inrolment or exemplification thereof, and all and singular matters and things, in the same contained, shall and may be good, firm, valid, sufficient, and effectual in the law, according to the true intent and meaning of the same: and shall be taken, construed, and adjudged, in the most favourable and beneficial sense, for the best advantage of the said Board or Society, and their successors, as well in all our courts of record, as elsewhere; by all and singular judges, justices, officers, ministers, and other subjects whatsoever, of us, our heirs and successors; any omission, imperfection, defect, matter, cause, or thing whatsoever to the contrary thereof, in anyways notwithstanding, without fine in our hanaper, &c. In witness whereof, we have caused these our letters to be made patent. Witness Ourselves at Westminster, this twenty-third day of August, in the thirty-third year of our reign. BY THE KING, (SIGNED) WILMOT.

APPENDIX. E.

Substance of Sir John Sinclair*'s Address to the Board of Agriculture, on the first Day of its being assembled.*

THAT he could not forbear troubling the Board with a few words, congratulating the Members present, on the complete establishment of so invaluable an institution as that of *a Board of Agriculture*. That in other countries attempts of a similar nature, on a humbler scale, had been made; but that the present, he believed, was the first instance, of such an institution having been snatched from the feeble hands of individuals, and invested with all the strength and vigour of public establishment.

That from the circumstance of his having moved in Parliament for the establishment of that Board, HIS MAJESTY had been graciously pleased to nominate him as President, a situation, to which he could not otherwise have aspired, among so many Members, distinguished by superior talents, and possessed of greater experience and skill in husbandry; but that he would endeavour to make up for any personal deficiency, by the most unwearied zeal and attention, to promote the objects for which the Board was constituted.

That no man would have ventured to have made such a motion in Parliament, without having previously sketched out, in his own mind, some general ideas, respecting the system that might be pursued, in case the proposed institution should take place, and that he would shortly state to the Board, what had occurred to him upon the subject.

That having carried on, for some years past, a correspondence with above 1500 individuals, on matters of a public nature (for promoting the improvement of British wool, and examining, with great minuteness, into the political state of Scotland) he was enabled, by the experience which he had thus acquired, to ascertain, in a great measure, those leading principles, on which so great and extensive a plan might be conducted, and these he would shortly submit to the consideration of the meeting.

That, in the first place, he had much satisfaction, in stating, as the foundation on which the edifice of national improvement might be built, that there existed in these kingdoms, a greater fund of solid ability, and of useful information, and a greater extent of actual and efficient capital, than, so far as he could judge, any other country of the same extent and population in the universe could boast of; and that little more would be necessary, but to call forth that ability, and to collect that information, and to give the capital of the country a direction or tendency to increase internal wealth and cultivation, in preference to more distant objects, in order to make this island, what it ought to be, "*The Garden of Europe*."

In the second place, he was certain, that there existed a greater mass of public spirit in the nation at large, (more especially among that description of people, with whom the Board of Agriculture was principally connected) than was commonly imagined; and he was satisfied, that the Board would find no difficulty, in prevailing on the active and intelligent husbandmen of this kingdom, to try any experiment, or follow any system, that could contribute to the public good, and did not materially militate against their own personal interests; and that a wide difference would be found, between a recommendation to improvement, coming from a respectable public body, than if it came from private individuals.

In the third place, this principle ought ever to be kept in view, that in a good cause, nothing can resist industry and perseverance. That at first, some doubts or jealousies might be entertained of a new institution, and some rumours might be circulated respecting the objects of the Board, which time would soon do away. But for his part, he entertained no doubt, that if Parliament would continue its pecuniary assistance for some years, (promoting, at the same time, by wise regulations, a general system of improvement) and if the Board (which he was persuaded would be the case) would steadily persist in its exertions, that in a very short period, the produce of many millions of acres, now cultivated in a very defective manner, would be greatly augmented; that many millions of acres, now lying waste, would be brought under cultivation, and that the stock of the kingdom would be improved, to at least double its present value.

In regard to the plan to be pursued, he submitted to the consideration of the Board, whether the first object ought not to be, *to ascertain facts*, without which no theory or system of reasoning, however plausible, could be depended on. That for that purpose, it would be necessary to examine into the Agricultural State of all the different Counties in the kingdom, and to inquire into the means, which, in the opinion of intelligent men, were the most likely to promote, either a general system of improvement, or the advantage of particular districts. That by employing a number of able men for that purpose, and circulating their Reports previous to their being published, requesting the additional remarks and observations of those to whom such communications were sent, it was probable, that no important fact, or even useful idea, would escape notice.

That the immense mass of information thus accumulated, would answer two purposes: first, it would point out the measures which the Legislature might take, for promoting Agricultural improvements; secondly, individuals would thus be instructed, by the practice and experience of others—the landlord in the proper mode of managing his property, and the farmer in the best plan of cultivating his fields.

That for attaining the first object, that of legislative assistance, it would be proper to digest the substance of the information that was accumulated, into one Report, to be submitted to the consideration of HIS MAJESTY, and of both Houses of Parliament; suggesting, in the Report, what measures had occurred, in the course of their inquiries, that could tend to the improvement of the country. He added, that from the spirit with which these Agricultural Surveys had been gone into, there was some reason to hope, that a Report might be drawn up, on the general state of the Husbandry of the kingdom, in time sufficient to enable Parliament, to take some effectual measures for the benefit of Agriculture, in the course even of the ensuing session.

That Parliament might be of essential service to Husbandry in two respects: first, by removing *all discouragements to rural industry;* and secondly, by granting *encouragements.* That the second was a matter of much delicacy, and which required very mature consideration.

At the same time it was certain, that by granting encouragements to Agriculture, the great Frederick of Prussia was enabled to double the value of his dominions, and to amass a very considerable treasure, amounting, it is well known, to many millions sterling. That such encouragements operated like manure spread upon the ground, which insured a more abundant harvest.. That they also had a tendency to impress on the public mind this truth, "that the proper cultivation of the soil, is an object so particularly interesting to the community at large, that those who most assiduously attend to it, are, perhaps, to be accounted the most meritorious citizens of their country." That in one point of view, at least, the husbandman was more intitled to public attention than those who followed other professions, being more fixed to the territory on which he lived, and less apt, from habit, inclination, or ability, to wander from it.

That in regard to instructing individuals, no doubt could be entertained, from the great mass of information which would be accumulated, by the correspondence of the Board, both at home and abroad, that the best mode of managing landed property, or in other words, the most advantageous system of connexion, between the landlord and the tenant, would be ascertained, and that the principles of rational husbandry, for the instruction of the practical farmer, would soon be brought to a very great degree of simplicity and perfection.

That he would not anticipate, with too much confidence, the important consequences, that might result from such an institution. He believed, however, there was none, from which the public at large, had reason to expect so many substantial benefits. That the Board, indeed, was already looked up to, even by foreign nations, as likely to become *the general magazine of knowledge on Agricultural subjects*. That they already considered it as the source from which they were to derive the most important information, and the most solid advantages. That in these respects, at least, Agriculture had an advantage over other arts, that no jealousy subsisted among those who were engaged in it, and that every discovery, which tended to its improvement, more essentially contributed, than any other, to promote the general good of the species.

He should only add, that if the measures he had ventured to hint at, and others connected with the internal improvement of the country, which he would afterwards take an opportunity of suggesting, were approved of by the Board, and carried on with alacrity and zeal, that he was willing to dedicate the whole of his time, and exertions, to assist in the prosecution of them; fully convinced that no pursuits could be more gratifying to the mind for the present, or would be recollected in future, with more heartfelt satisfaction.

APPENDIX. F.

Sir John Sinclair*'s Address to the Clergy of the Church of England, on the Nature and Principles of Statistical Philosophy.*

THE object of all political society evidently is this, that every individual connected with it, ſhall have the means of enjoying, as much real happiness, as the imperfect condition of human nature will admit of.

In order to secure an adequate proportion of happiness to each individual, it is a duty incumbent on every government, whatever its form may be, to make minute and regular inquiries, into the circumstances of the people over whom it is placed, for the purpose of ascertaining, to what extent they already enjoy the advantages of political society, or in what respects their ſituation can be ameliorated.*

To that science, which points out the proper objects of such inquiries, and the surest means of making them effectual; the science consequently, which tends most to promote, both the good of the individual, and the prosperity of a state; which indeed includes in it every object of real utility, connected with, or arising from, the existence of political society, I have ventured to give the name of STATISTICAL PHILOSOPHY. †

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* If all governments were impressed with a proper sense of this important duty, it would be of less consequence what the particular form was; only that form would be the moſt desirable, where such inquiries were the most likely to take place, namely, in a well regulated monarchy, in which the people had a proper organ by which they could act; for under that form, as soon as the existence of the duty above alluded to was known, and acknowledged, the prince, for the sake of the glory and the satisfaction resulting from statistical investigations; and the people, from feeling the advantages to be derived from them, would take care that any necesssary inquiry into the state of the country should not be neglected. It does not require the spirit of prophecy to foresee, that as soon as the present war is over, such inquiries will become general in Europe. The attention of the people will then be diverted, from delusive phantoms of ideal liberty, to those objects which constitute the real happiness of the individual, and the solid interest of the state.

† It is now about forty years, as we are informed by professor Zimmerman, in his Political Survey of Europe, that a branch of political knowledge, which has for its object the actual and relative power of the several modern states, the power arising from their natural advantages, the industry and civilization of their inhabitants, and the wisdom of their governments, has been formed, chiefly by German writers, into a separate science. It used formerly to be improperly connected with geography; and it was but superficially treated amidst the topographical and descriptive details of the larger geographical works. By the more convenient form it has received, and by its growing importance, this science, distinguished by the new coined name of STATISTICS, is become a favourite study in Germany. The best account of the origin of statistical inquiries is given in Baron Bielfield's Elements of universal Erudition.

It is not proposed, on the present occasion, to enter minutely into the various important topics connected with so extensive a subject. It may be sufficient now to remark, that it is by an anxious attention to facts, to which the great improvements which have been recently made in chemistry, in mechanics, and in other arts and sciences, can alone be attributed.—Since these have rested, not on visionary theory, but on the sure basis of investigation and experiment, they have been carried, in modern times, to a degree of certainty and perfection, of which anciently they were supposed incapable. It is by pursuing the same method, in regard to political disquisitions, by analyzing the real state of mankind, and examining, with anatomical accuracy and minuteness, *the internal structure of society*, that the science of government can alone be brought to the same height of perfection.

Many inquiries, it is certain, have at various periods, been made into the political circumstances of nations: unfortunately, however, they have uniformly been instituted, with a view of ascertaining the state of the country, for the purposes of taxation and of war, and not of national improvement. Their object has been, not to meliorate the condition of the people, but to fill the exchequer, or the armies of the state;* and the utmost that could be expected from them, was to render taxation, and other public burdens, less unequal. But, in modern times, more extensive and more important objects of investigation have been pointed out. Real statesmen, and true patriots, no longer satisfied with partial and defective views of the situation of a

In regard to the words *statistic* or *statistical*, they may either imply inquiries connected with the state of a country, or respecting matters of state; the first is the point of view in which I propose to consider them. The particular term made use of, however, is of little consequence. As to the thing itself, it may be sufficient to remark, that the inquiries instituted in Germany, of a *statistical* nature, were merely for the purpose of ascertaining the political strength of a country, and not the quantum of happiness it enjoys, and far less the means of its future improvement. This is a *new* branch of politics, therefore, the superior utility of which many of the most respectable characters in Germany, and in other parts of Europe, have acknowledged in the most flattering terms, and which a great American warrior and statesman, the President of the American Congress (General Washington) in a letter to the author has thus characterized. " I cannot but express myself highly pleased with the undertaking in which you are engaged (that of drawing up the *Statistical* Account of Scotland) and give my best wishes for its success. I am fully persuaded, that when enlightened men will take the trouble to examine so minutely into the state of society, as your inquiries seem to go, it must result in greatly ameliorating the condition of the people—promoting the interests of civil society—and the happiness of mankind at large.—These are objects truly worthy the attention of a great mind, and every friend to the human race, must readily lend his aid towards their accomplishment."

* Sallust, in his Orat. ad Cæsarem de Republ. ordin. II. i. cap. i. has clearly explained the objects of ancient statesmen. " In republica, cognoscenda, multam, magnamque, curam habui, uti quantum, *armis, viris, opulentia*, ea possit, cognitum haberem." From Townsend's Travels to Spain, vol. 3. p. 348, it appears, that in 1575, Philip II. proposed making similar researches, on a very great and extensive scale; but they never seem to have been brought to any conclusion. In France, in Prussia, in Sweden, in Saxony, in Sardinia, and in Tuscany, such plans have been attempted; but with a view of ascertaining the present state, rather than the means of future improvement.

country, are now anxious to ascertain, the real state of its agriculture, its manufactures, and its commerce;—the means of improvement of which they are respectively capable—the amount of the population of a state, and the causes of its increase or decrease—the manner in which the territory of a country is possessed and cultivated—the nature and amount of the various productions of the soil—the value of the personal wealth or stock of the inhabitants, and how it can be augmented—the diseases to which the people are subject, their causes and their cure—the occupations of the people—where they are intitled to encouragement, and where they ought to be suppressed—the condition of the poor, the best mode of maintaining them, and of giving them employment—the state of schools and other institutions, formed for purposes of public utility,—the state of villages and towns, and the regulations best calculated for their police and good government—the state of the manners, the morals, and the religious principles of the people, and the means by which their temporal and eternal interests can best be promoted.

Impressed with the deepest sense of the nature and importance of the objects abovementioned, in the month of May, 1790, I circulated among the clergy of the church of Scotland, a number of queries, for the purpose of elucidating the statistical situation of my native country. Nothing could be more flattering than the reception they met with, from that learned and respectable body. Scotland is divided into about 950 parochial districts; and, in less than eighteen months, reports were received from above one-half of that number. The returns that were transmitted, also, were nor trifling or superficial; but, in general, such as might be expected, from men of extensive knowledge, and of sound abilities, acquainted with the various topics to which their attention was directed. With so much zeal, indeed, have they entered into this inquiry, that, in less than four years from its commencement, this great and extensive Survey will be nearly completed.

Astonished with so rapid a progress, and convinced that the most important and beneficial consequences must be derived from it, to mankind in general, but more especially, to these kingdoms of Great Britain and Ireland, I flatter myself, that no doubt can now be entertained in the mind of any one, respecting the propriety of carrying on a similar inquiry in the southern part of the island. The possibility of completing such an investigation has formerly been questioned, but every idea of its being impracticable, is now done away, by its success in Scotland. The clergy of the church of England, who have so long distinguished themselves by their splendid exertions in every branch of literature, will not surely suffer so favourable an opportunity to escape, of adding to their character and their fame. It is an undertaking, which, however great and laborious, they undoubtedly have the power, and I have no doubt, it will be found, they have also the inclination, to accomplish. To have their attention directed to so many important and useful objects of inquiry, will prove a greater source of pleasure and improvement, than it is possible at first to conceive: and being engaged in a great pursuit, which unites the *utile* and *dulce*, will soon appear the most pleasing of all occupations. There is now also a public institution (the Board of Agriculture and Internal Improvement) constituted, among other objects, for the express purpose of facilitating the progress of such a measure, and of bringing it as speedily as possible to a conclusion. Nor ought it to be omitted, that the Church of England was never more happily distinguished, by learned and respectable characters, whose enlarged and liberal views, will naturally lead them to encourage such investigations.——In order to explain their general nature and tendency, and the best means of carrying them into execution, it is proposed to circulate, the annexed analysis, of the statistical account of a parochial district, or of any other territorial division, tables which may render such accounts less obscure or voluminous, and SPECIMENS OF THE ACCOUNTS OF CERTAIN DISTRICTS IN SCOTLAND, in many respects differing from each other, and including almost every possible variety.*

It is only necessary to add, that if this Survey is happily completed, and similar ones are afterwards periodically taken every fifty or one hundred years, they will furnish the best means of ascertaining the progress of national improvement, and will point out the proper system to be pursued, in order to bring political society, in these kingdoms, to the highest pitch of happiness and perfection.

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* The specimens above alluded to, will be found in the Statistical Account of Scotland, and consisted of the following articles.

No. I. Specimen of a pastoral district——United parishes of Kinguisse and Inch, county of Inverness.

No. II. Specimen of a small inland agricultural district——Parish of Morham, county of East Lothian.

No. III. Specimen of a greater agricultural district, situated on the coast——Parish of Graitney, or Gretna, county of Dumfries.

No. IV. Specimen of a district where manufactures have commenced——Parish of Moulin, county of Perth.

No. V. Specimen of a district where manufactures have been established, with a view of the effects they have on the manners, the morals, and the health of the inhabitants——Parish of Nielston, county of Renfrew.

No. VI. Specimen of a town and district, with manufactures and foreign commerce——Town and parish of Montrose, county of Angus.

No. VII. Specimen of the statistical account of a large city, giving a view of the progress of arts, luxury, and refinement——City of Edinburgh, &c.

Analysis of the Statistical Account of a Parochial District, or of any other territorial Division in a Country.

Name of the district, and its origin.
Its situation and extent.
Number of acres.
Description of the soil and surface.
Nature and extent of the sea coast.
Lakes, rivers, islands, hills, rocks, caves, woods, orchards, &c.
Climate and diseases.
Instances of longevity.
State of property.
Number of proprietors.
Number of residing proprietors.
Mode of cultivation.
Implements of husbandry.
Manures commonly made use of.
Seed time and harvest.
Remarkable instances of good and bad seasons.
Price of grain and provisions.
Total quantity of grain and other articles consumed in the parish.
Wages and price of labour. Hours when labour commences and ceases at the different seasons.
Personal services, whether exacted or abolished.
Commerce.
Manufactures.
Fisheries.
Towns and villages.
Police.
Inns and alehouses.
Roads and bridges, private, parochial, or public.
Harbours.
Ferries, and their state.
Number of ships and vessels.
Number of seamen.
State of the church.
Patron, glebe, parsonage, &c.
Number of poor.
Parochial funds, expence of the poor, and mode of management.
State of the schools, and number of scholars.
Ancient state of population.
Causes of its increase or decrease.
Annual average of births, deaths, and marriages.
Number of families.
Exact amount of the number of souls now living.
Number of males.
Number of females.
Division of the inhabitants, by the place of their birth; by their residence, whether in town, in villages, or in the country; by their ages, occupations, &c.
Number of houses.
———— uninhabited houses.
Minerals in general.
Mineral springs.
Coal and fuel.
Eminent men.
Antiquities.
Parochial records.
Miscellaneous observations.
Character of the inhabitants.
Their manners, customs, stature, &c.
Advantages and disadvantages of the district.
Means by which the situation of the inhabitants can be meliorated.

It might be the means of shortening such Accounts considerably, if the information respecting a number of articles were condensed as much as possible, in the shape of a Table, according to the annexed Specimen.

STATISTICAL TABLE OF THE PARISH OF ———

Length in English miles - -
Breadth - - -
Population 40 or 50 years ago -
——— *anno* 17 - -
Increase (or decrease) - -
Average of births } for any number of years preceding 17
——— of deaths } for any number of years preceding 17
——— of marriages } for any number of years preceding 17
Inhabitants in towns - -
——— in villages - -
——— in the country -
Number of males - -
——— females - -
——— persons under ten years of age -
——— ——— between 10 and 20 -
——— ——— between 20 and 50 -
——— ——— between 50 and 70 - -
——— ——— between 70 and 80 -
——— ——— between 80 and 90 - -
——— ——— between 90 and 100 -
——— ——— above 100 -
——— families - -
——— houses inhabited -
——— ditto uninhabited -
——— new houses built within these 10 years - -
——— old ditto pulled down -
——— married persons -
——— children, at an average, from each marriage

Number of Twins, &c. born in the parish for the last 10 years - -
——— Bachelors, or unmarried men above 50 -
——— Unmarried women above 45 - - -
——— Widowers - -
——— Widows - -
——— Males born out of the parish - -
——— Females ditto - -
——— Persons born abroad -
——— ——— in Scotland
——— ——— in Ireland
——— ——— in the Colonies -
——— Proprietors residing -
——— non-residing - -
——— Clergymen - -
——— Merchants - -
——— Physicians - -
——— Surgeons - -
——— Midwifes - -
——— Writers, or Attornies
——— Schoolmasters - -
——— Farmers under 50*l.* *per annum* - -
——— Ditto from 50*l.* to 100*l.*
——— Ditto from 100*l.* to 300*l.*
——— Ditto from 300*l.* to 500*l.*
——— Ditto above 500*l.* - -
——— Shopkeepers - -
——— Innkeepers, greater and smaller - -
——— Smiths - -

Number of Masons - -
——— Carpenters - -
——— Weavers - -
——— Shoemakers - -
——— Taylors - -
——— Butchers - -
——— Millers - -
——— Bakers - -
——— Gardeners - -
——— Male domestic servants -
——— Female ditto - -
——— Male farm servants -
——— Female ditto - -
(Add any other occupation by which a person gains a livelihood in the district.)
——— Poor - -
Property belonging to them - -
Annual income -
——— Young persons taught writing, arithmetic, &c.
——— Latin - -
——— Greek - -
——— At the university - -
——— Ships - -
——— Small vessels - -
——— Boats - -
——— Seamen - -
——— Fishermen - -
——— Persons serving in the navy during the last war. - - -
——— Ditto in the army -
Average of persons who have settled in the district during the last 5 or 10 years -
——— Ditto who have emigrated from it -
Number of acres, statute measure -
——— Wheel carriages -
——— Carts - -
——— Ploughs - -

In some places the following TABLES also might perhaps be filled up, but in no case ought this to be attempted, unless it is perfectly agreeable to the inhabitants of the District.

	£. s. d.		£. s. d.
Rent, *anno* 17 - - -		Value of articles exported * - -	
—— *anno* 17 - .		——— ditto imported - - -	
Rents spent in the district - -		Balance - - -	

VALUE OF STOCK.

		£. s. d.			£. s. d.
Number of draught horses - - -	valued at		each.	Total	
——— saddle and carriage horses - -	———		——	——	
——— best cattle - - -	———		——	——	
——— inferior ditto - - -	———		——	——	
——— best sheep - -	———		——	——	
——— inferior ditto - - -	———		——	——	
——— goats, swine, &c. - -	———		——	——	
Value of carts, ploughs, and other implements of husbandry	———		——	——	
			Total value of stock	- £	

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[*] It would be desirable also to ascertain the nature and amount of the articles exported and imported, as well as their value, as is done in the parish of Graitney. See Statistical Account of Scotland.

ANNUAL PRODUCE.

Crops.	Number of Acres under each.	Produce per acre. Bushels.	Price per bushel. £. s. d.	Total price per acre. £. s. d.	Total produce. Bushels.	Total value. £. s. d.
Wheat - - -						
Barley - -						
Oats - -						
Beans - -						
Peas - - -						
Potatoes -						
Flax - -						
Turnips - -						
Cabbage, &c. -		Stones	per stone		Stones	
Meadow, hay, or natural grass						
Sown grass - -						
Straw, at	per quarter of corn -					
Pasture, at	per horse ;		per cow ; and		per sheep	
	Annual produce of gardens - - -					
	——— orchards - - -					
	——— woods and plantations - -					
	——— fisheries - - -					
	——— mines - - -					
			Total value of annual produce		-	

Model of Bills of Mortality, and Tables of Deaths, Births, and Marriages, as suggested by the Royal College of Physicians at Edinburgh.

BILLS OF MORTLALITY for the Parish of during the Year

TABLE OF DISEASES.

I. FEBRILE DISEASES.

	Un. 6 Ms.	Bet^{n} do.& 1Yr.	1 & 2	2 & 3	3 & 4	4 & 5	5 & 6	6 & 7	7 & 8	8 & 9	9 & 10	10 & 15	15 & 20	20 & 25	25 & 30	30 & 40	40 & 50	50 & 60	60 & 70	70 & 80	80 & 90	90 & 100	Above 100	Total.
Intermittent Fever -																								
Continued Fever -																								
Inflam. of the Brain -																								
—— —— the Throat																								
—— —— Breast																								
—— —— Bowels																								
—— —— Liver																								
—— —— Kidneys																								
Rheumatism -																								
Croup -																								
Gout - -																								
Erysipelas - -																								
Small Pox natural -																								
Ditto inoculated -																								
Measles - -																								
Spitting of Blood -																								
Consump. of the Lungs																								
Catarrh - -																								
Dysentery - -																								
Total -																								

II. NERVOUS DISEASES.

	Un. 6 Ms.	Betⁿ do.& 1 Yr.	1 & 2	2 & 3	3 & 4	4 & 5	5 & 6	6 & 7	7 & 8	8 & 9	9 & 10	10 & 15	15 & 20	20 & 25	25 & 30	30 & 40	40 & 50	50 & 60	60 & 70	70 & 80	80 & 90	90 & 100	Above 100	Total.
Apoplexy - -																								
Palsy - -																								
Fainting - -																								
Locked jaw -																								
Epilepsy - -																								
Hooping Cough -																								
Cholera Morbus -																								
Diarrhœa - -																								
Diabetes -																								
Canine Madness -																								
Insanity - -																								
Total -																								

III. CACHECTICAL DISEASES.

	Un. 6 Ms.	Betn do.& 1 Yr.	1 & 2	2 & 3	3 & 4	4 & 5	5 & 6	6 & 7	7 & 8	8 & 9	9 & 10	10 & 15	15 & 20	20 & 25	25 & 30	30 & 40	40 & 50	50 & 60	60 & 70	70 & 80	80 & 90	90 & 100	Above 100	Total.
Atrophy																								
Tympany																								
General Dropsy																								
Dropsy of the Brain																								
—— —— Breast																								
—— —— Belly																								
Tumour of the Belly																								
Rickets																								
Scrophula																								
Venereal Disease																								
Scurvy																								
Jaundice																								
Total -																								

IV. LOCAL DISEASES.

Illiac Passion																								
Suppression of Urine																								
Aneurism																								
Cancer																								
Hernia																								
Flooding																								
Abortion																								
Gangrene																								
Total -																								

V. ANOMALOUS DISEASES.

	Un. 6 Ms.	Bet^n do.& 1 Yr.	1 & 2	2 & 3	3 & 4	4 & 5	5 & 6	6 & 7	7 & 8	8 & 9	9 & 10	10 & 15	15 & 20	20 & 25	25 & 30	30 & 40	40 & 50	50 & 60	60 & 70	70 & 80	80 & 90	90 & 100	Above 100	Total.
Diseases unknown -																								
Casualties -																								
Dentition -																								
Gravel and Stone -																								
Worms -																								
Drunkenness -																								
Poison - -																								
Total -																								

TABLE OF DEATHS, AGES, AND CONDITIONS.

Ages.	Males.	Females.	Ages	Bachelors	Husbands	Widowers	Maids	Wives	Widows	Total	B^n in the city	B^n elsewhere	Inhabitants	Strangers
Under 1 month -			20—30											
Between 1—2 months			30—40											
2—3 - -			40—50											
3—6 - -			50—60											
6—9 - -			60—70											
9—12 - -			70—80											
1—2 years old -			80—90											
2—3 - -			90—100											
3—4 - -			100—110											
4—5 - -			110—120											
5—10 - -			120—130											
10—15 - -			Total of ages and conditions.											
15—20 -				Total of ages under 20 yrs. } Males. Fem. }										
Total of the above ages				Tot. of ages and conditions										

TABLE OF DEATHS, BIRTHS, AND MARRIAGES IN EACH MONTH.

	Deaths		Births		Marriages				Total Deaths	Total Births	Total Marriages	
	Males	Females	Males	Females	Both unmar. before	Husb. mar. before	Wife mar. before	Both mar. before				
January - -												1st Quarter.
February - -												
March - -												
April - - -												2d Quarter.
May - - -												
June - - -												
July - -												3d Quarter.
August - -												
September - -												
October - - -												4th Quarter.
November - -												
December - -												
Total for the Year -												

It would be extremely desirable, that the clergy in the country parishes, and some respectable physician, with the assistance of the magistrates, in towns, would regularly keep such Bills of Mortality and Tables, and would transmit them to the Board of Agriculture and Internal Improvement, at their Office in London: it might be the means of throwing much light on many important objects of political inquiry, in which the health and interests of the inhabitants of these kingdoms are deeply involved.

APPENDIX. G.

Plan of the Agricultural Surveys.

The Board of Agriculture, will have occasion to employ some very intelligent surveyors, or persons skilled in Husbandry, in examining into the agricultural state of all the different counties of England and Scotland, and in pointing out in what respects there is room for improvement.

The inquiries principally to be made, will relate to the following points:

1. The nature of the soil and climate of the district to be examined?

2. The manner in which the land is possessed, whether by great or by small proprietors?

3. The manner in which the land is occupied, whether by great or by small farmers?

4. The manner in which the land is employed, whether in pasture, in husbandry, or a mixture of both?

5. If in pasture, what grasses are cultivated? what species of stock is kept? whether the breeds can be improved, or whether new breeds ought to be tried?

6. Whether any of the land is watered, and whether any considerable extent of ground is capable of that improvement?

7. If the land is employed in husbandry, what are the grains principally cultivated?

8. What is the rotation of crops? and in particular, whether green crops, as turnips, clover, &c. are cultivated, and how they are found to answer?

9. Whether fallowing is practised, or otherwise?

10. What manures are made use of?

11. What are the usual sorts of ploughs, carts, and other implements of husbandry?

12. Whether oxen or horses are made use of?

13. What is the usual seed time and harvest?

14. Whether the land is inclosed or in open fields?

15. What advantages have been found to result from inclosing land, in regard to the increase of rent,——quantity or quality of produce,——improvement of stock, &c.

16. What is the size and nature of the inclosures?

17. Whether inclosures have increased or decreased population?

18. Whether there are any common fields, and whether any division of them is proposed?

19. What is the difference of rent, or produce, between common fields and inclosed lands?

20. What is the extent of waste lands, and the improvement of which they are most capable, whether by being planted, converted into arable, or into pasture land?

21. What is the rate of wages, and price of labour; and what are the hours at which labour commences and ceases, at the different seasons?

22. Whether proper attention is paid to the draining of land, particularly the fenny part of it, and what sorts of drains are commonly made use of?

23. Whether paring and burning is practised, and how is it managed and found to answer?

24. Whether the country is well wooded, and whether the woodlands are kept under a proper system?

25. What is the price of provisions, and whether the price is likely to be steady, to rise, or to fall?

26. What is the state of the roads both public and parochial, whether they are in good order, or capable of improvement?

27. What is the state of farm houses and offices, whether in general they were well situated and properly constructed?

28. What is the nature of the leases commonly granted, and the covenants usual between landlord and tenant?

29. To what extent have commerce or manufactures been carried on in the district, and have they had either good or bad effects on its agriculture?

30. Are there any practices in the district, that could be of service in other places?

31. Are there any societies instituted in the district for the improvement of Agriculture?

32. Whether the people seem to have a turn for improvements, or how such a spirit could best be excited?

33. What improvements can be suggested either in regard to the live stock or the husbandry of the district?

34. Are there any obstacles to improvements, and in what manner can they best be removed?

35. What are the names, descriptions, and address of those proprietors, or farmers, who are the most active, or the most skilful improvers in the district, and who are the most likely to be useful correspondents to the Board of Agriculture?

It is proposed, for the sake of making such Surveys as easy as possible, that each person, who may undertake them, shall have a district that may be gone over in five or six weeks: so that it may be undertaken by those, who have a good deal of business of their own, without much inconvenience. Thus also the Board will have a greater variety of information, and a greater mass of instructive observations, from a greater number of intelligent men, for their consideration and guidance.

It is farther proposed, that the reports received by the Board, shall first be circulated as much as possible, in the counties to which they relate, for the benefit of receiving the observations, and additional remarks of every farmer and gentleman in the district. From the information thus accumulated, a complete state of its Agriculture will be drawn up and published; copies of which will be presented by the Board, to every individual, who may have favoured them with his assistance.

The Board can only make an allowance, at the rate of £5. per week, for the expence of such a tour. Indeed a number of persons, with great public zeal, and much to their credit, have undertaken to survey several districts gratuitously. But that is not always to be expected, particularly from professional men. The payment of their expences, they are well intitled to expect, if they give their time and trouble for nothing. Profit, however, must not be the object of those who undertake such an employment; nor could such a Board wish to be concerned with any one, who would not willingly make some sacrifices for the public good, and indeed who would not take a pride in having any share in promoting so useful an undertaking.

P. S. If the district is remarkable for its orchards, for its cider, for its dairy, for its cheese, for its butter, for its breed of sheep, cattle, horses, hogs, &c. or the culture of woad, liquorice, &c. particular attention is requested to those articles, or to any other in which it may excel. Drawings also, and exact descriptions, of the different breeds of sheep, cattle, horses, and hogs, in each district, would be particularly desirable. The quantity raised of each sort of crop, in the different parts of the district, and the quantity of milk produced by the different breeds of cattle, or of wool by the different breeds of sheep, cannot be too accurately ascertained and noted.

APPENDIX. H.

Arrangement of the Agricultural Surveys, and the Persons by whom they were respectively undertaken.

ENGLAND.

	County.	Person.
	Norfolk	Mr. Kent.
	Suffolk	Mr. Arthur Young.
	Essex	Mess. Griggs of Hillhouse, and Mr. Charles Vancouver.
	Middlesex	Mr. Thomas Baird, and Mr. Foot.
5	Surry	Messrs. Malcolm of Stockwell.
	Kent	Mr. Boys of Betshanger.
	Sussex	Rev. Mr. Young.
	Hants	Messrs. Driver, and the Rev. Mr. Warner, jun. for the Isle of Wight.
	Dorset	Mr. Claridge.
10	Devon	Mr. Robert Frazer, and the Agriculture Societies of Devon and Cornwall.
	Cornwall	
	Somerset	Mr. Billingsley.
	Wilts	Mr. Davis of Longleat.
	Berks	Mr. Pearce.
15	Bucks	Messrs. Malcolm of Stockwell.
	Oxon	Mr. Robert Davis.
	Bedford	Mr. Stone.
	Leicester	Mr. Monk, and the Agriculture Society of Leicester.
	Warwick	Mr. John Wedge.
20	Northampton	Mr. James Donaldson.

	County.	Person.
	Huntingdon	Mr. Stone, and Mr. Maxwell.
	Herts	Mr. David Walker.
	Rutland	Mr. Crutchley of Burley.
	Chester	Mr. Thomas Wedge.
25	Lincoln	Mr. Stone.
	Cambridge	Mr. Charles Vancouver.
	Durham	Mr. Grainger, and the Agriculture Society of Durham.
	Northumberland	Mr. Bailey, and Mr. George Culley.
	Salop	Mr. Bishton of Killsall.
30	Stafford	Mr. William Pitt of Pendeford.
	Monmouth	Mr. Fox.
	Hereford	Mr. Clarke.
	Gloucester	Mr. Turner of Dowdeswell.
	Derby	Mr. Brown of Luton.
35	Notts	Mr. Lowe of Oxton.
	Cumberland	Mr. Bailey, and Mr. George Culley.
	Westmorland	Mr. Pringle of Balencrieff.
	Worcester	Mr. Pomeroy of Fairway, near Honiton.
	Lancaster	Mr. Holt of Walton.
40	East Riding, Yorkshire	Mr. Leathem.
	North ditto	Mr. Tuke, jun.
	West ditto	Mr. George Rennie, Mr. Brown, and Mr. Shirreff.

WALES.

	Pembroke	Mr. Hassall.
	Carmarthen	
45	Cardigan	Mr. Lloyd, and the Rev. Mr. Turner.
	Radnor	Mr. Clarke.
	Brecon	
	Glamorgan	Mr. Fox.
	North Wales	Mr. George Kay.

SCOTLAND.

50	Berwick	Mr. Low, and Mr. Bruce.
	East Lothian	Mr. Buchan Hepburn.
	Mid Lothian	Mr. George Robertson of Granton.
	West Lothian	Mr. James Trotter.

	County.	Person.
	Dumfries	Dr. Bryce Johnston of Holywood.
55	Galloway, both county and Stewartry	Mr. Webster.
	Ayr	Colonel Fullarton.
	Dunbarton	Reverend Mr. Ure.
	Renfrew	Mr. Alexander Martin of Salton.
	Argyll, and Western coasts of Inverness	Mr. Robson.
60	The Hebrides, or Western Islands	Rev. Dr. Walker, professor of natural history in the University of Edinburgh; and Mr. Heron.
	Stirling	Reverend Mr. Ure.
	Clackmannan	Mr. Erskine of Marr.
	Roxburgh	Reverend Mr. Ure.
	Selkirk	Mr. Thomas Johnston.
65	Tweedale	
	Clydesdale	Mr. John Naismith.
	Carse of Gowrie	Mr. James Donaldson.
	Monteath and Strathearn in Perthshire	Rev. Dr. Robertson of Callander.
	Kinross	Dr. Coventry, professor of Agriculture in the University of Edinburgh.
70	Fife	Mr. Beatson of Lochgellie.
	Forfar	Mr. Dempster of Dunnichen, and the Rev. Mr. Roger.
	Mearns	Mr. Barclay of Urie, and Mr. James Donaldson.
	Aberdeen	Dr. Anderson.
	Banff,	Mr. James Donaldson.
75	Moray	
	Nairn, and eastern part of Inverness	
	Interior districts in the Highlands	Mr. Marshall, author of the Norfolk Husbandry, &c.
	Ross, Sutherland, and Caithness	Sir John Sinclair.
	Orkney Isles	
80	Shetland Isles	

As the Reports transmitted to the Board, are to be printed, and very generally circulated, in the counties to which they respectively relate, previously to their being published, there is every reason to believe, that no material error can escape observation, and that every useful fact, or valuable idea, existing in the kingdom, on the subject of agriculture, will be brought forward.

A copy of the returns transmitted by the different surveyors (or the one that respects any particular county,) will be sent to the Members of both Houses, on application to the Board, by a letter directed to Sir John Sinclair, the President, at Whitehall, London. It is requested that such application may be made as quickly as possible *(as the number of copies, to be printed, must be settled accordingly)*, and that a direction be sent at the same time, how the papers are to be addressed.

APPENDIX. I.

Account of the Manner in which the Parliamentary Grants received by the Board of Agriculture, prior to the 4th of September, 1796, have been expended.

N. B. An additional £3000. was voted in April, 1796, but it was not paid on the 4th Sept. following.

		£.	s.	d.
Fees on the Letters Patent, constituting the Board	£ 712 1 0	1189	12	2
Fees on receipt of the grants	477 11 2			
Expence for the Surveys of the different counties		2171	3	6
Printing the Surveys, and engravings therein contained		3411	2	6
Postage and other incidental charges		255	6	11
Office furniture, and articles for the museum		118	19	6
Stationary		106	14	1
Salaries to officers		1660	0	0
Advertisements		77	12	4
German translations		9	9	0
		£9000	0	0

For so great an undertaking as the Survey of a whole kingdom (without adverting to the various other objects to which the attention of the Board has been directed), so small a grant as £3000. per annum, particularly deducting so large a sum as £1189. 12*s.* 2*d.* for fees of office, would have made no progress, had not about one hundred Members of the Board subscribed ten guineas each, in aid of its other funds,—had not the President supplied the Board with every accommodation that was necessary for carrying on its business, without putting it to any expence, and had not a number of individuals either gratuitously assisted the Board in drawing up the County Reports, and other papers, or executed the different tasks entrusted to them, on the most moderate terms.

It is hardly necessary to add, that none of the Members of the Board, can possibly derive the smallest advantage, from the labour they bestow in conducting the affairs of the Institution, though in a late publication an insinuation to that effect has appeared.*

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* See Additional Facts on the expences of the War, &c. by William Morgan, F. R. S. p. 52. "The "Secretary and Under-secretary to the new Board of Agriculture (he observes) receive a salary. The "Commissioners, (he adds) I believe, for the most part officiate gratuitously." The fact is, that all the Commissioners, as he is pleased to call them, officiate gratuitously; and that the President, instead of receiving any thing, incurs an expence of at least 1000l. per ann. in consequence of the situation he holds, which, at the same time, is probably the most laborious of any in the kingdom. In regard to the small pittance granted by Parliament, it is to be remarked, that the greater part of it will be returned to the public and its officers, in fees of office, in postage, in duties on advertisements, but above all in duties upon paper, which, when all the Reports are reprinted, will amount to a very considerable sum.

APPENDIX. K.

Substance of Sir John Sinclair's *Address to the Board of Agriculture, on Tuesday the twenty-ninth of July,* 1794: *stating the Progress that has been made by the Board, and the Advantages that may be expected from improving the Territory of the Kingdom.*

THAT he considered it extremely necessary, for any person who filled that situation in which he happened to be placed, previous to the Annual Adjournment of the Board, to give a short statement of the business which had been transacted in the course of the Session, and of the progress that had been made in carrying on the important objects for which the Board was constituted.

That at the commencement of the present, being the first Session after its establishment, the attention of the Board had naturally been directed to the formation of those bye-laws which were to regulate its future proceedings, the original sketch of which had been drawn up with great attention and ability, by a Noble Lord (Lord Hawke), to whose zeal and assiduity the Board, in that and in other respects, had been infinitely indebted.

That a great variety of important communications had been transmitted to the Board from many quarters, both at home and abroad, on all the different topics connected with agricultural inquiry, furnishing a number of valuable hints, which might be of essential service in promoting the improvement of the country. These hints, he observed, might either be separately printed, or incorporated with the Reports of the Board. That the committee appointed " to take the Present State of the Waste Lands, and Common Fields of this Kingdom, and the probable Means of their Improvement, under their consideration," had already made great progress in that important inquiry, and he had no doubt, would, when the Board re-assembled, have a Report ready, fully explaining the ancient laws respecting the division of such lands, and the best means of facilitating them in future ; and that the Board was already in possession of a very interesting and able paper, drawn up by one of its members (John Robinson, Esq. surveyor-general of the woods and forests), which had thrown much light upon that subject.

Above all, that the progress made in the Agricultural Survey of the Kingdom (the basis of all the measures which the Board might think it advisable to recommend to the attention of the public) had surpassed the most sanguine expectations. The whole kingdom had been assigned in districts to different surveyors, from each of whom a separate Report was required. Such a plan had never been formerly attempted in any country ; and many doubts were entertained whether it would be possible to effect it even in Great Britain, in any reasonable space of time. He had the pleasure, however, of acquainting the Board, that seventy-four Reports had been already given in, and were either printed or now in the press, and that the remainder were in such a state of forwardness, that they might soon be expected ; and, consequently, within twelve months from the Establishment of the Board, this great object would be completed. That to the credit of the Gentlemen who engaged in this laborious undertaking, a considerable number of them would accept of nothing for their trouble, and the remainder were satisfied with sums, in general, scarcely adequate to the expences they had incurred. That the Reports they had given in, were not to be considered as complete Systems of Husbandry, but merely as Chapters of a Great Work, distributed at present, as affording the readiest means of collecting farther information. That the circulating of 80,000 Papers, on so popular a subject as that of Agriculture, must have a strong tendency to direct the public attention, in a very peculiar manner, to that object; which, indeed, had already sufficiently appeared, from the anxiety to procure those Papers, and from the demand which had lately arisen for Works on Agriculture.—That about 100 Reports had been already received back, the margins of which were filled with many valuable hints and observations. That he had no doubt a considerable number of the Reports in circulation would be returned with remarks of equal merit. The Board would thus have under its inspection at once, not only very interesting accounts of the present State of the Kingdom, and a complete collection of all the past skill and experience of which the country was possessed, in matters of Husbandry, but probably every suggestion that the kingdom was master of, respecting the means or its future improvement: " a mass of useful information, of which it " cannot with justice be asserted, that any other nation has ever yet been possessed."

In regard to the use that ought to be made of the information thus accumulated, by the labour and exertions of so many active and intelligent Individuals, there are two points which he begged leave to submit to the consideration of the Board. First, that they ought not to suffer the public attention to waste itself, previous to their communicating that information to the Country; and, secondly, that instead of frittering away the valuable treasure they have thus obtained, in partial Reports, they should endeavour to condense it into one Great System.

To explain more fully to the Board the idea which he had formed of a General Report, he had drawn up a Plan, stating the various subjects to be treated of in it, and the order in which they might be arranged, and which he flattered himself it would be possible for the Board to complete, in the course even of the ensuing Session.

PLAN of a GENERAL REPORT, on the Present State of the AGRICULTURE OF GREAT BRITAIN, *and the Means of its Improvement: to be laid before his* MAJESTY, *and both* HOUSES OF PARLIAMENT, *by the* BOARD OF AGRICULTURE.

Introduction, and Plan of the Report.

Chap. 1. General View of the Natural Advantages possessed by Great Britain, for carrying on Agricultural Improvements.

Chap. 2. State of Property in the kingdom—Lands held in Severalty, or in Common—Size of Estates—Advantages resulting from a diversity of landed property, in point of extent.

Chap. 3. Mode of Occupation, in Woods—Plantations—Pastures, natural or artificial—Arable Land—Gardens—Orchards—English Husbandry, or the union of Improved Stock and Skilful Culture.

Chap. 4. Manner of Cultivation—Land cultivated by the Owner—Lands let—On the proper Size of Farms.

Chap. 5. System of Connection between the Landlord and the Tenant, or Leases and the Covenants in them.

Chap. 6. Rent, whether payable in Money, in Kind, or in Personal Services—whether Taxes are paid by the Tenant, or otherwise—Of taking Fines.

Chap. 7. Buildings on a Farm and their Repairs, with observations on the accommodations necessary for a Farmer.

Chap. 8. Wages of Servants—Price of Labour; whether by the day or the piece—Cottages.

Chap. 9. Inclosures, their nature and advantages.

Chap. 10. Draining, whether surface or under draining.

Chap. 11. Live Stock. 1. Sheep. 2. Cattle. 3. Horses. 4. Hogs, &c. with Engravings of the different Breeds.

Chap. 12. The Dairy and its Productions.

Chap. 13. Implements of Husbandry, and Engravings of the best kinds.

Chap. 14. Oxen, and their use in Husbandry.

Chap. 15. Manures, whether of a mineral, vegetable, or animal nature.

Chap. 16. Rotation of Crops adapted for the different soils.

Chap. 17. Comparison between the Drill and Broadcast Husbandry, and on Dibbling.

Chap. 18. On Fallowing, and the extirpation of Weeds.

Chap. 19. Culture of the different kinds of Grain, and the soils for which they are respectively best calculated.

Chap. 20. Harvesting, and the best means of preserving Grain and Roots, either from the inclemency of the weather, or from vermin.

Chap. 21. Culture of Green Crops.

Chap. 22. Culture of Artificial Grasses—whether pastured on, cut green, or converted into hay, and on the best mode of preserving Herbage.

Chap. 23. Crops not generally cultivated, as Hops, Hemp, &c. &c. and the Culture of Plants for Dying, for Medicine, &c.

Chap. 24. Husbandry of the Fens, including Paring and Burning.

Chap. 25. Natural Meadows and Pasture, and the proper mode of managing them.

Chap. 26. Embankments.

Chap. 27. Watering Land, or Artificial Meadows, and a comparison between them and other Pastures, in regard to quantity and quality of Produce.

Chap. 28. Gardens and Orchards, and the diseases incident to Plants.

Chap. 29. Woods and Plantations.

Chap. 30. Of Waste Lands, and the means of their Improvement, whether by rendering them Arable—converting them into Water Meadows, or Pasture, or into Plantations.

Chap. 31. Of the proper System to improve Waste Lands, either by private individuals, or public companies: with a view of increasing the population, as well as the produce of the country.

Chap. 32. Roads, Public and Parochial; and Navigations connected with Agricultural Purposes.

Chap. 33. Markets, domestic and foreign; and on the advantages of establishing a uniformity of weights and measures.

Chap. 34. Effects of commerce, manufactures, and fisheries, on Agriculture, and the advantages of their union together.

Chap. 35. Of manufacturers residing in the country, and being occasionally employed in the cultivation of the soil.

Chap. 36. Of the poor, and the means of employing them in the operations of Agriculture.

Chap. 37. The corn laws, and on the policy of encouraging a surplus of grain for exportation, after supplying the consumption of the country.

Chap. 38. Of Agricultural legislation and police.

Chap. 39. On the price of provisions, and the laws for encouraging the sale, or manufacturing the produce of the country.

Chap. 40. Miscellaneous observations.

CONCLUSION.

Chap. 1. Obstacles to improvement, and the means of removing them.

Chap. 2. Hints of improvement from foreign countries.*

Chap. 3. Means of exciting a spirit of industry and improvement in the labourer, the farmer, and the landlord: and whether public encouragements are necessary for that purpose.

Chap. 4. General view of the Agricultural produce of the kingdom.

Chap. 5. Resources of the nation, from the farther improvement of its stock and territory.

In order that the General Report might not be drawn out to too great a length, it is proposed that an Appendix shall be annexed to each chapter, for the purpose of containing a number of facts and observations, which, though tending to illustrate the subject treated of, might, in the opinion of some, be considered of a less interesting nature.

That besides the General Report, it would be expedient to reprint and to publish, the various Agricultural accounts now in circulation, with every possible correction and improvement, and in such a form, that every individual may have it in his power to purchase, on reasonable terms, either the account of his own particular county, or the Reports relating to all the different counties, or the General Report on the State of the Kingdom at large, as he may find most desirable.

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* Many useful hints may be got from other countries; at the same time it is certain, that even foreigners acknowledge, it is to England that the revival of Agriculture is to be ascribed.—See the French Encyclop. voce *Agriculture,* where, on the authority of the Marquis de Mirabeau, we are told, " Les Anglois, *auxquels on doit le retablissement de l'Agriculture en Europe,* comprirent les premieres, qui l'art que etoit le fondement de tous les autres, etoit le pivot sur lequel devoit rouler le commerce."

The Spanish writers are not less sensible of this truth. A very ingenious gentleman of that country, Don Joseph Valcarcel, of the city of Valencia, seems well convinced of the fact. " It must be acknowledged, (says he) that England has opened the eyes of other nations. Those islanders, whose natural melancholy renders them pensive, after trying so many schemes to become powerful, have discovered at last, that it is Agriculture alone which forms the source and origin of their greatness. They have added wings to this science, by Agricultural laws, which have been further encouraged by premiums. If on this principle we were to calculate the progress of that monarchy, we shall find their power to have increased in a threefold degree, and that their force has augmented in proportion to its improvement." *Agricultura General, por* Don Jos. VALCARCEL: Valencia, 1765, Tom. i. p. 55.

He could not conclude, without attempting to give, even in this early stage of their proceedings, some general idea of the public benefit to be derived from the improvement of the territory of the country.

It is not difficult, even on such data as have been already obtained, to make calculations sufficiently accurate for every useful purpose, respecting the probable advantages to be expected from the improvement of the kingdom, in regard to income—capital—and population: and perhaps a short statement of such advantages, may awaken more the public attention, and be more satisfactory to the generality of the people, than long disquisitions. He had, therefore, embraced the earliest opportunity, of throwing together some ideas upon the subject, for his own private satisfaction, and for the consideration of the Board and of the public.

Of the different Reports given in to the Board, that from the county of Cambridge is by far the most minute, the surveyor having, with great labour, gone from parish to parish, and in general having obtained sufficient information, in regard to stock, produce, and population. At the conclusion of his Report, he recapitulates the increase of rent which may be expected, by improving the cultivation of 319,300 acres in that county, of which the following is an abstract.

Number of Acres.	Description of the Land.	Increased Rent per acre.	Total Increase.
150,000 - -	Waste and unimproved Fen - -	£ 0 10 0	£ 75,000 0 0
132,000 - -	Open and Common Field Arable Land - - - -	0 8 0	52,800 0 0
19,800 - -	Inferior Pasture - - - - -	0 9 7	9,487 10 0
7,500 - -	Of Upland Common - - -	0 11 0	4,125 0 0
8,000 -	Of Fen Common - - -	0 10 0	4,000 0 0
2,000 - -	Of ½ yearly Meadow Land - -	0 8 6	850 0 0
319,300	At an average about 9*s.* per acre.		£ 146,262 10 0

That it seemed to him impossible to contend, that these rents are exorbitant, or beyond what any tenant would be willing to pay for the advantage of having his land drained, inclosed, and put in a state of improvement. This seems, therefore, a fair foundation, on which the following calculations may be built.

That the above increased rent, it is evident, can only arise from increased produce, or decreased expences, but principally from the former; and it is not unreasonable to say, that the tenant ought to have of increased produce alone, thrice the increased rent, or, in the county of Cambridge, deducting smaller sums, £438,000. per annum.

That to prove this is a low calculation, it is sufficient to remark, that stating the additional produce of 319,300 acres at £438,000. is only at the rate of about £1. 7*s.* per acre, which surely cannot be called too high an estimate.

That in order to judge what addition this would make to the national capital, the increased produce ought to be multiplied by thirty;—hence the total value, at thirty years purchase, would amount to £13,140,000.

That in the view of additional population, the result is equally satisfactory. According to the common calculation, £10. at an average, is sufficient for every human being, men, women, and children included; consequently £438,000. of additional produce would furnish subsistence to 43,800 additional inhabitants.

The general result, in regard to Cambridgeshire, is then as follows:

Number of acres to be improved, - - - -	319,000
Addition of rent, at the average of about 9*s.* per acre, - - -	£146,262
Additional produce, at £1. 7*s.* per acre, - - - -	£438,000
Addition to the national capital at 30 years purchase of the produce, -	£13,140,000
Probable increase of population, - - - -	43,800 souls.

That, for the purpose of calculating the extent to which improvements may be carried in the kingdom at large, it is necessary to state, that according to the computation of the celebrated Dr. Halley, Cambridgeshire is a 70th part of England and Wales, consequently the above results are to be multiplied by seventy, in order to ascertain the improvable value and population of the southern part of the United Kingdom. The result of that calculation would be as follows:

Number of acres to be improved, - - - - -	22,351,000
Addition of rent, at the average of about 9*s.* per acre, - -	£10,057,950
Additional produce, at £1. 7*s.* per acre, - - - -	£30,173,850
Addition to the national capital, at 30 years purchase of the produce -	£905,215,500
Probable increase of population - - - -	3,017,385 souls.

That of the number of acres to be improved, namely, 22,351,000. one half probably consists of waste lands, and the other half of common fields, and lands under defective cultivation; and that great as would be the benefit to be derived from the improvement of the former, it was the latter from which the greatest expectations of solid advantage were to be entertained.

That doubtless there would be some, who, unaccustomed to such calculations, or perhaps from despondency of temper, might be inclined to question them. They may probably say that one district is too small a foundation, on which to build so great a superstructure: that Cambridgeshire has an unusual proportion of wastes and common fields, and consequently cannot furnish fair data for such a calculation, &c. &c. To this it may be sufficient to answer, that in such cases, minute exactness is not to be looked for. That to be enabled to form some general idea of the nature and extent of public improvement, is a great step gained.

That from every information which the Board of Agriculture has as yet been able to procure, there are at least twenty-two millions of acres, partly waste, and partly already in cultivation, which may be made to yield an additional produce of £1. 7*s.* per acre. That the above calculations are confined to South Britain; and that one-sixth more, at least, might have been added for North Britain, had there been any wish to make exaggerated estimates: and that as much of the additional produce will consist of wool, hides, and other raw materials, which will employ many hands, and the value of which will be trebled by being manufactured, it is impossible that the above statement can do justice to the additional wealth and population of the country, resulting from a general improvement of the soil; more especially, when the improvement of the live stock in the kingdom is taken into consideration, from which so much additional advantage may be expected.

Another objection which may be urged, is, that no deduction is made on account of the expence of these improvements.—That is undoubtedly a circumstance intitled to the attention of those private individuals, by whom such improvements are to be made ; but in a national account, it is not an object for consideration. The public pays for none of these improvements : though John should employ Thomas to survey a waste, to inclose a common field, to build a new house for a farmer, or to raise new plantations, the public, instead of losing, would gain by the expenditure. The money thus laid out, might have lain dormant in the coffers of a banker, might have been wasted on foreign luxuries, might have been employed in manufacturing articles for foreign markets, which were never paid for ; or might have been destined for the cultivation of distant territories, with all the risk of being taken from us by an enemy, on declaring themselves independent. How different is the result, when our money is laid out at home, and employed in a manner, in every possible point of view, so peculiarly beneficial. The improvements of our own land cannot be taken from us. They require no additional troops to defend them, nor fortresses to be reared for their protection. But if any person should incline to consider the money expended in carrying on the amelioration of our own soil, as so much national loss, let him state the expence at the sum of £4. per acre, which is certainly sufficiently high, (for the first crops, after any field is improved, are in general so luxuriant as to repay all necessary expences) and even then, ample inducements for improving will still remain.

The expence of improving 22,351,00 acres, at £4. per acre, would amount to - - - - - - - - £89,404,000

Interest thereof at five per cent. - - - - - £4,470,200

These sums are to be deducted from £905,215,500. of additional national capital, and £30,173,850. of additional national income.

That here it was impossible not to advert to the astonishing difference between expending eighty-nine millions in improvements at home, or in foreign conquest. After the expenditure of that sum in war, it would be accounted a most fortunate means of reimbursement, if we could secure any territory, by a commercial intercourse with which, five millions per annum could be gained ; whilst, at the same time, it would be necessary to pay at least five millions of additional taxes. But if that money were laid out at home, or rather, if private individuals were encouraged to expend a part of their wealth and capital in the internal improvement of the country, instead of new taxes being necessary, the old ones would become lighter, and more easily paid, and instead of dragging five millions per annum, from an enormous distance, and consequently with much risk and expence, thirty millions would be produced within our own domain, and always at our command. That these were truths which had been often vaguely talked of, and consequently made little impression, but which were now likely to be probed to the bottom, and established beyond a doubt.

He should conclude with remarking, that, with such a prospect of public prosperity resulting from the labours of the Board, he was persuaded every member of it would persevere with alacrity and zeal, in completing the great undertaking in which they were engaged : the effect of which would be felt and remembered, whilst any vestige of civilization, of useful industry, or of political happiness, could be traced in Europe.*

APPENDIX. L.

Substance of Sir John Sinclair's *Address to the Board of Agriculture, on Tuesday the* 14*th of July*, 1795.

Stating the Progress that had been made in carrying on the Measures undertaken by the Board, for promoting the Improvement of the Country, during the second Session since its Establishment.

> Ye generous Britons, venerate the plough;
> ——So with superior boon may your rich soil,
> Exuberant, Nature's better blessings pour
> O'er every land, the naked nations clothe,
> And be th' exhaustless granary of a world! THOMSON'S SPRING.

THAT he could not think of their separating for the summer, without laying before the Board, according to the practice of last year, an abstract of their proceedings, at the conclusion of what ought properly to be accounted their second Session, only one Meeting having been held in 1793, when the Board was originally constituted.

That nothing could give him greater satisfaction, than to observe the progress which the Board was making, towards completing the great measure which it had at first undertaken, namely, that of ascertaining the Present State of the Agriculture of these Kingdoms, and the Means of its Improvement. That not only the rough draught of the Survey of each County,

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* The following is an abstract of the Agricultural State of Warwickshire (known to be one of the best cultivated counties in England) as reported to the Board of Agriculture.

	Acres.
Land in tillage—Wheat, 25,700—Fallow, 15,000—Turnips and Vetches 15,000—Barley, Oats, Beans, &c. 41,500—Tillage lands grazed, 45,000—Ditto in Grass, and mown for Hay, 12,330. Total - - - - - - - - -	154,530
Gardens 4000—Meadows 82,000—Woods, Canals, and Rivers, 50,000 - -	136,000
Roads supposed to be - - - - - - - -	10,470
Open fields, 57,000—Pasture and feeding lands, 150,000—Waste lands 110,000 -	317,000
	618,000

On the supposition that only £1. 7*s.* could be obtained from 317,000 acres of improvable land, and 10*s.* of additional produce from 154,530 acres under tillage, which might certainly be expected from abolishing fallows, &c. the result would be, £505,215. and as Warwickshire is a 60th part of England and Wales, the total additional produce of the southern part of the kingdom would, on that supposition, be £30,312,900. per annum.

with hardly any exceptions, (and those would soon be supplied,) had been printed, but that the reprinting of the Reports had also commenced, from which it would appear what progress had been made in collecting additional information. The reprinted Report of Lancashire, which was now ready for publication, would fully explain the Plan according to which those Reports were in future to be drawn up. From an examination of that Report, the public would see, to what a pitch of perfection, Agricultural knowledge was likely to be brought, by the accumulation of so many valuable materials.

That next to collecting information, the Board was naturally anxious, to excite a spirit of improvement; a spirit which could best be roused, by pointing out to the Legislature those obstacles which prevented Agricultural industry, and by endeavouring to prevail upon Parliament to remove them. When the Reports were completed, it might be expedient for that purpose to draw up an Abstract of the whole, adhering to the division by Counties, but restricting the information to those points which were of general importance. That Report, which it would be proper to lay before his Majesty and both Houses of Parliament, would state such measures as seemed to be the most likely to rouse a spirit of Agricultural Exertion. He hoped that important work would be completed, before the ensuing Session of Parliament was brought to a conclusion.

The third object, that of drawing up a General Report, in which each subject connected with Agriculture should be distinctly treated, had also made considerable progress. Several of the chapters were already drawn up; and the Fifteenth Chapter, on the great subject of Manures, was printed, and in circulation. That Chapter fully explained the nature of the proposed Report, and the manner in which it was intended to be executed.

Among the duties of the Board of Agriculture, there was none of more real importance, than that of bringing under the consideration of Parliament, such measures as were likely to promote the interests of every description of persons connected with husbandry, more especially those of the lower orders of Society. With that view, a Bill was brought into Parliament, on the recommendation of the Board, which had passed into a Law, and was likely to prove of much consequence to that valuable class, the Common Labourers, who were intitled to the peculiar attention of the Legislature, and to the protection of the Board, in enabling them to lay out their little pittance to the best advantage, and without the risk of imposition.*

That a most important, but at the same time a very delicate branch of duty, incumbent upon the Board, is that of submitting to the consideration of Parliament, the claims of those, who merited to be rewarded, on account of discoveries advantageous to Agriculture. That any attempt of that sort, it might easily be supposed, was liable to many difficulties. That the Board had succeeded, in its first application, in behalf of a very deserving individual, Mr. Joseph Elkington, who had carried the art of Draining Land to a perfection hitherto unknown, and which, if spread over the whole kingdom, must necessarily prove the source of infinite public benefit. That sum, being the first ever granted by Parliament for any discovery of importance to Husbandry, rendered it more valuable to the person who received it, and more creditable to the Board, in consequence of whose recommendation it had been obtained. That the Board had this day appointed a Committee, for the purpose of attending to that subject, during the recess; by whose exertions, he had no doubt, considerable progress would be made, in the course even of this year, in having those individuals taught, who might be sent with that view to Mr. Elkington.

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* This Act, which was recommended to the attention of the Board by Sir Christopher Willoughby, one of its members, and was introduced into Parliament by Mr. Powys, is intitled, "An Act for the "more effectual Prevention of the Use of defective Weights, and of false and unequal Balances."

That there is no duty more incumbent on a Board of Agriculture, than that of recommending such measures, as are the most likely to provide a sufficient quantity of food for the People: recommendation, it is well known, is all that a Board possessed of such limited powers can attempt; but in that respect, it fortunately seems to be possessed of considerable influence. The deficiency of the last crop, becoming too apparent at the commencement of this year, an Extraordinary Meeting was held to take the subject into consideration, when the Board resolved, to recommend the Culture of Potatoes, as in every point of view the resource the easiest to be obtained, and the most to be depended on. By accounts received from various parts of the Island it appears, that the recommendation had been attended with the best consequences. There is every reason to believe, that perhaps 50,000 additional acres of Potatoes, have been planted in consequence of that recommendation. As each acre of Potatoes, will feed, at an average, from eight to ten people for twelve months, it is probable that the Board have been the means of raising as great a quantity of that food, as will maintain nearly a million of people for six months, and consequently it will have been the happy instrument, of preventing the risk of scarcity or famine during the ensuing season. For the purpose of increasing that culture in future, and of ascertaining the principles on which it could best be conducted, a Report has been drawn up and printed, which contains all the information that could be collected in Great Britain or Ireland, and from foreign publications, on the subject of Potatoes.

That for many years past, constant complaints have been made, of the increasing price of provisions. Many causes have been assigned for such a circumstance, and many remedies suggested; but the most effectual one undoubtedly is, that of cultivating the many millions of acres now lying waste and unproductive. That to that point he should take the liberty of calling the attention of the Board early in the course of the ensuing Session; and in the interim he trusted, that the members of the Board would pay every possible attention to the subject.

"Let us cut off those legal bars,
"Which crush the culture of our fruitful Isle.
"Were they removed, unbounded wealth would flow,
"Our wastes would then with varied produce smile,
"And England soon a second Eden prove."

The last, and perhaps the most important object, to which the attention of the Board can be directed, is that of attending to the situation and circumstances of the lower orders of the people. That important branch of our duty had not been neglected during the course of the present session. In addition to the specific measures above alluded to, a Special Committee was appointed to take the general subject into consideration, who have laid the foundation, by their investigations, for very important regulations in regard to that great branch of political economy. A matter of that importance, however, requires much deliberation, before either Parliament can be applied to, for new laws, or any recommendation can be submitted to the consideration of private individuals. But there were three points, which seemed to meet with a very general concurrence. The first was, to promote Improvements in the Construction of Cottages, more especially to ascertain the means by which the consumption of fuel could be diminished. The second, to recommend the annexing of a large garden to each cottage, by which the labourer, with the assistance of his family, might be enabled to raise a considerable quantity of provisions, without being obliged to go to market for every thing he had occasion for. Many instances of the benefit resulting from such an appendage were stated in the different County Reports, and were known to many members of the Board. The third point was, that of encouraging, by every possible means, the Extension of Friendly Societies, that most fortunate of all institutions for the benefit of the poor, and the most likely means, that could possibly be devised, for rendering their situation comfortable.

That the variety of important subjects, regarding which it was necessary for the Board to collect information, and of measures which it might have occasion to recommend to the public attention, having rendered it extremely desirable, to establish a correspondence with some respectable body in each county, it had occurred, that either the Grand Juries, or the Magistrates assembled at the quarter sessions, were in every point of view, the fittest and most respectable description of persons for the Board to correspond with. That a circular letter had been sent by the Board, suggesting the many public advantages that might be derived, by establishing a committee of the magistrates in each county, to correspond with the Board upon such subjects, which there is every reason to believe will be cordially acceded to; a most desirable circumstance, as such an intercourse could not fail to be productive of consequences equally satisfactory to the Board, and important to the general interests of the country.

The President then concluded his Address in the following words:

On the whole, the Board have only to persevere, with zeal and alacrity, in the great course in which they are now engaged, in order to effect objects, which were never compassed in any other country; and which, without an institution, carried on with such zeal and energy, would never have been supposed attainable. And in carrying on this great undertaking, we ought to consider, that we are not only labouring for ourselves and our posterity, and for the nations by whom we are surrounded, who must profit from our instructions, and be benefited by our example, but that we are laying a foundation for the future prosperity and happiness of the human race; since their prosperity and happiness must ever depend, on the facility with which their means of sustenance can be provided. This country has much to boast of.—In the arts of war it has had few equals: in commerce and manufacturing industry, it has gone beyond all competition: in every branch of learning, it has produced individuals, who can rival the proudest names that antiquity can exhibit: *and if in addition to those other sources of fame and credit, it can bring Agriculture, and the useful arts connected with it, to perfection,* (which by the exertions of this Board can hardly fail to be speedily accomplished,) where is the nation that will be able to make a more distinguished figure, in the page of history?

APPENDIX. M.

Sir John Sinclair*'s Address to the Board of Agriculture, on Tuesday, the twenty-fourth of May,* 1796.

Stating the Progress that had been made by the Board, during the third Session since its Establishment.

> Igitur et de cultura agri præcipere, principale fuit, etiam apud exteros; siquidem et reges fecere, Hiero, Philometor, Attalus, Archelaus, et duces Xenophon, et Pœnus etiam Mago; cui quidem tantum honorem senatus noster (Romanus) habuit, Carthagine capta; ut cum regulis Africæ bibliothecas donaret, unius ejus duo de triginta de agricultura volumina, censeret in Latinam linguam transferenda, cum jam M. Cato præcepta condidisset, peritisque linguæ Punicæ dandum negotium, in quo præcessit omnes vir clarissimæ familiæ D. Syllanus. PLIN. Hist. Mund. L. XVIII. c. 3.

GENTLEMEN,

As it will probably be extremely difficult, to procure again a sufficient attendance of the Members of the Board, at this season of the year, and during the bustle of a general election, I think it may not be improper, to take the opportunity of this meeting, briefly to state the progress we have made, since I last had the honour of addressing myself to you, at the conclusion of the preceding session.

It is on all hands acknowledged, that the exertions of the Board of Agriculture last year, in promoting an extra cultivation of Potatoes, was attended with the happiest consequences, the beneficial effects of which (both the culture and use of that valuable root having thus been greatly extended) will probably long be felt, when the circumstance from which it originated may be forgotten. In fact, in times of scarcity and distress, there is no article comparable to Potatoes.—They will grow in the poorest soils; they can be taken up in detail as they are wanted; they require no manufacture of drying, milling, &c. previous to their being used; and they can be prepared in various ways for consumption. Above all, it is to be observed, that there is a space of perhaps four months, which generally is supplied from the old stock, but in times of scarcity must be taken from the new crop. That is a circumstance of less consequence where spring corn is the food of the people (but even there it is desirable to thrash the corn in winter rather than in spring, as the straw is better for the cattle): but where the people live upon wheat, which is sown in autumn, the case is otherwise; and it is impossible to say what distress it might occasion (when there is no old stock of wheat in the country) unless the aid of such an article as Potatoes can be obtained, if the farmer is obliged, in a hurried and destructive manner, to thrash corn, both for seed to himself, and food for the public. He might be tempted, indeed, by the high price of grain for food, to delay sowing his seed, until the favourable season has elapsed, in which case it is impossible to say what damage would ultimately result from it.

The Board not having yet obtained the privilege of franking, its correspondence is much more limited, and less regular than it ought to be, and is attended with a degree of trouble and inconvenience to the person who presides at it, of which it is difficult to form an adequate conception. In consequence, however, of the want of this privilege, so essential to a public institution, and the great restrictions recently imposed upon the privileges enjoyed by a Member of Parliament, it has been found impossible, to keep up that extensive and regular correspondence, and to produce that extent of information, from which the public might derive so many important advantages. By the active zeal, however, of many friends to the institution, information was at a very early period sent to the Board, containing rather unfavourable accounts of last year's crop of wheat. I thought it a duty, therefore, incumbent upon me, to make use of every degree of influence, which my situation as President of this Board gave me with the public, to recommend, in the strongest manner, an extra cultivation of wheat last autumn. My letter upon that subject, dated 11th September, 1795, was sent to all the Members of the Board, was transmitted to the quarter sessions of the different counties, and was printed in above fifty different newspapers. It is with much pleasure I add, that the recommendation was attended with more extensive consequences than could well have been expected. From all parts of the kingdom intelligence has been received, that a greater quantity of wheat was sown last autumn, than perhaps at any period in the memory of man; and should the ensuing harvest prove favourable, this kingdom will be as well stocked with grain as it was some years ago. At any rate, by these measures, much risk of an immediate scarcity seems to be obviated.

The high price of corn, at the commencement of the last session, naturally directed the attention of Parliament, to consider the best means, not only to remedy the present distress, but to prevent it in future.—For attaining the first object, a Select Committee was appointed, known under the name of the Corn Committee, whose anxious zeal to do every possible justice to the great subject referred to their consideration, merits the utmost praise. The measures recommended by that Committee, have since been considered unnecessary by some individuals, in consequence of the price of grain having had a temporary fall.—But it will probably yet appear, that had it not been for the earnest recommendation of that Committee, to economize the consumption of bread, to use other kinds of grain as substitutes for wheat, and to encourage the importation of foreign corn by bounties of uncommon magnitude, the price of grain would not probably have decreased, and complaints would have been made of the inattention of Government to the distresses of the country. A more serious ground of accusation than an over anxiety, which, at all times, particularly in regard to so critical a matter as the subsistence of the people, is at least excusable, but on the present occasion, was not only necessary, but has proved extremely beneficial.

It was a matter, however, of still greater importance, to prevent, by some great and effectual measure, the risk of scarcity in future, and our being under the disgraceful and fatal necessity, not only of depending upon foreign grain for our subsistence, but also of encouraging its importation by high bounties. With that view, in consequence of the directions of this Board, I had the honour of moving in Parliament, for the appointment of a Select Committee, to take into its consideration the means of promoting the cultivation and improvement of the waste, uninclosed, and unproductive lands of the kingdom. The passing of a general bill of inclosure, though long ardently wished for, has hitherto been attempted in vain, and by many was held to be impracticable. By the exertions, however, of the Select Committees, to whom the drawing up the bill, and the consideration of the whole subject was referred, a bill has at last been prepared, which in the opinion of many intelligent persons, conversant in that subject, is fully adequate to the object in view: and had not the last session been closed rather earlier than was expected, it would probably have received the sanction of the Legislature this year. I trust, however, that the first session of the ensuing Parliament, will have the credit of completing this important and valuable system, on which the future subsistence of the country depends. It is not likely at least to fail, if it can be effected by the exertions of the Board of Agriculture.

Another measure recommended by the Board, of infinitely less importance, but at the same time beneficial to the agricultural interests of the country, has already passed. I allude to the exemption of linseed and rape cakes from duty, by an act of last session, 36 Geo. III. cap. 113.* The first article, linseed cake, is of considerable importance to the feeders of cattle, and may be had, it is supposed, in abundance, from America; where a great quantity of linseed oil is made use of in painting their wooden houses. The refuse, known under the name of linseed, or oil cake, is of little value there, in consequence of the superabundance of other kinds of provision for cattle. Nothing would be more desirable, than thus to establish a new source of trade, beneficial to two countries, inhabited by a race of men, speaking the same language, descended from the same common origin, and who ought to consider themselves as the same people.—As to rape cake, it is found to be a valuable manure in many parts of this kingdom. Considerable quantities of this article, it is supposed, may be obtained from the continent of Europe; and since this regulation has taken place, rape will probably be cultivated in America. Were Russia also to devote some part of her boundless territories to the culture of that plant, the foundation of a commerce might be laid, advantageous to both empires.

In regard to collecting and circulating agricultural information, the true foundation of all those various improvements, which, under the auspices of the Board, will probably be effected, considerable progress has been made. The general views of the agricultural state of the different counties, with the exception of two small districts in Scotland (Clackmannan and Kinross), a part of each of which is already printed, have been completed. The corrected Reports of Lancashire, Norfolk, Kent, Staffordshire, and Mid-Lothian, are published; and those of several other counties are almost ready for the press. A valuable addition has been made to the printed paper on Manures. The sketch of a Report on a point which has of late been much discussed; namely, the size of farms, has also been printed, and throws much light upon that subject. A valuable communication from Lord Winchelsea, on the advantage of cottagers renting land, was ordered to be printed, with the unanimous approbation of those who had the satisfaction of being present when that paper was read to the Board.

It is impossible in this short abstract of our proceedings, to give any idea of the numerous communications transmitted to the Board, or of the various points to which its attention has been directed. Its experiments in regard to the composition of bread, and information transmitted to it upon that subject, would of itself have been sufficient to have occupied the full attention of many Societies. The perfection to which the manufacturing of barley flour has been carried under the auspices of this institution, is a discovery of great importance, as it is thus ascertained, that from the meal of pearl or pot barley, bread may be made, in taste and colour, and probably in nourish-

* Intitled, An Act for allowing the importation of Arrow Root from the British plantations, and also of Linseed Cakes and Rape Cakes from any foreign country, in British built ships, owned, navigated, and registered according to law, without payment of duty.

ment, little inferior to that of wheaten flour; and that in the proportion of at least one-third, such meal may be mixed with the produce of wheat so as hardly to be distinguished. A very general correspondence has been established, for the purpose of ascertaining the price of stock, both lean and fattened. Experiments on a great scale, under the directions of that able chemist Dr. Fordyce, are now carrying on at Gubbins in Hertfordshire, the seat of Mr. Hunter, for the purpose of ascertaining the principles of vegetation, and the effects of manures; and steps are now taking, in order to procure such information respecting the various sorts of live stock in the kingdom, as will enable us to give, in the course of next year, complete information to the public upon that important subject.

I have ever considered it to be a wise principle for the Board to adopt, not to print books for reference, but books for use; not massy volumes on a variety of different subjects, beyond the income of the generality of the people to purchase, or their time to peruse; but, if possible distinct publications, each of them on one article, exclusively of every other, avoiding the intermixture of various topics, and districts in the same work. It would also be desirable, that no paper should be published by the Board, until it has first been printed, circulated among all those who are likely to correct and improve it, and thus brought to some degree of perfection previous to its publication. Agriculture, though often treated of, has hitherto never been discussed; and it can never be much improved, until information respecting it has been collected from all quarters, has been afterwards thoroughly canvassed, and has ultimately been condensed and systematized. Such, however, has been the great number of communications transmitted to the Board upon various important subjects, in particular Farm Buildings, Cottages, and the State of the Poor, Embankments, Roads, the Constructions of Mills, and of Hand-mills in particular; together with a variety of interesting papers respecting the agriculture of foreign countries, that the Board has resolved to print a specimen of those papers, in one volume quarto, in order to ascertain the opinion of the public respecting that mode of laying before it, the papers we have received, in addition to the County Reports now publishing.

The business gone through by the Board of Agriculture, is certainly more than could possibly be expected, from an institution possessed of such limited powers, and of so confined an income. The time, however, it is to be hoped, is not far distant, when it will be put on a better and more respectable footing.—When the superior importance of such inquiries, the superior value of agricultural resources, the dreadful expence, and fatal consequences occasioned by their deficiency, will be so clearly ascertained, as not to be a subject of doubt to the weakest understanding. For the purpose of effecting so desirable an object, I propose preparing, in the course of the ensuing recess, for the consideration of the Board, and if it should have the good fortune of meeting with their approbation, to be laid before his Majesty, and both Houses of Parliament, a General Report on the Agricultural State of Scotland, and the means of its improvement. That work will probably explain, in a satisfactory manner, the soundness of that political maxim, that the prosperity of a country ought to be founded, on a spirit of internal improvement, and that a single additional acre cultivated at home, is more truly valuable, than the most extensive possessions acquired abroad, at an enormous expence of treasure and of blood, and retained with difficulty and danger. To that important subject, when hostilities are brought to a conclusion, I trust that the attention of this country will be directed. Fortunately, by the exertions of the Board of Agriculture, when peace is happily restored, the internal state of this kingdom will be sufficiently ascertained, and we shall be able to judge, what are the fittest steps to be taken, in order to make the utmost of our domestic resources. To that period I look up with much anxiety. If Europe once more breathes in peace, and is governed by wise counsellors, the contest among nations naturally will be, not who will feel the greatest eagerness to rush again into the horrors of war, under the pretence of promoting national glory, but who will be the most anxious to remain in peace, for securing the national interests.

I cannot conclude, without expressing my best acknowledgments, for the assistance I have received from so many respectable Members, in carrying on the business of this institution. By their exertions, I trust, it will be brought to such a state, that from its establishment will be dated, not only the improvement and internal prosperity of our own country, but much of the comforts enjoyed in future times by society in general. Permit me to add, that when the Board re-assembles, each of us will, I hope, bring some proof of his zeal for the cause, by the additional information we shall respectively furnish. He who augments the stores of useful knowledge already accumulated, whilst he secures to himself the most satisfactory sources of enjoyment, promotes at the same time, in the most effectual manner, the happiness of others.

APPENDIX. N.

General View of the Inquiries essential for the Internal Improvement of the Kingdom, with the Plan for reprinting the Agricultural Surveys, in a corrected form. By the President of the Board of Agriculture.

A BOARD established for the purpose of making every essential inquiry, into the Agricultural State, and the means of promoting the internal improvement of a powerful empire, will necessarily have it in view, to examine the sources of public prosperity, in regard to various important particulars. Perhaps the following is the most natural order for carrying on such important investigations; namely, to ascertain,

1. The riches to be obtained from the surface of the national territory.
2. The mineral or subterraneous treasures of which the country is possessed.*

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* The following Letter on the subject of a Mineralogical Survey, written by the celebrated Kirwan, that respectable philosopher, is recommended to the reader's attention.

SIR,

When last I had the honour of meeting you in London, you were pleased to express a wish, that, in order to promote a mineralogical survey of the kingdom, the proper objects of inquiry in every country should be briefly pointed out, and in such a manner, as that they may easily be discerned even by such persons as cannot be supposed to be deeply versed in such matters; in compliance with your wishes I now send you the principal heads of such inquiries, many of which may be satisfactorily answered by architects, common land surveyors, masons, and even labourers, though it were to be wished that persons of still superior education, as those of the clerical and medical professions, were also con-

3. The wealth to be derived from its streams, rivers, canals, inland navigations, coasts, and fisheries: And

4. The means of promoting the improvement of the people in regard to their health, industry, and morals, founded on a *statistical* survey, or minute and careful inquiry into the

sulted. In the mining countries in particular, as Cornwall, Derbyshire, Flintshire, Devonshire, Lancashire, &c., the overseers of the works could give the best information: in many, several private gentlemen are known to be well instructed in those matters.

1st. Are there any mountains in that county? and their names; what is their course or direction? their height, known or reputed? whether of steep or gentle ascent, cultivated, woody, or otherwise? dry or abounding in springs? in continued ridges, or separate and distinct? what sort of stone are they formed of, (whether at the top, middle, or bottom? what is their inclination?) or is found in them? as granite, sandstone, whin, limestone, marble, alabaster, Derbyshire spar, freestone, flags, slates, gravel, flint, &c. are they solid or cavernous? are they single or one within the other? and the different stones in each. What other hills or *eminences* are there? of what composed? stony or chalky, and their direction and bearings with respect to the mountains?

2dly. What rivers traverse the county? their names, length, breadth, depth, and direction, what lesser streams flow into them, and their direction? temporary or perennial, apt to overflow or otherwise? what lakes and their extent?

3dly. What, or do any mineral springs occur in any or what parishes, and what is their nature if known? by whom examined and when?

4thly. What sort of stone commonly occurs in different parishes in the plains? in sandpits, making of roads, for building, millstones, &c. and what quarries?

5thly. What are the different soils that occur in different parishes, as clays, marls, sands, loams, are these last clayey, or sandy, or gravelly, or chalky? what mosses? do they yield peat? have brick clay, fire-clay, potters' clay, terras, fullers' earth, tripali, &c. been found?

6thly. What mines are found in the country? whether metallic, or saline, or coaly? whether in veins, or beds, or bellies? their inclination and direction or bearing? how is the ore raised? where are the ores worked, and the general mode of smelting them? were any, or what *improvements* lately made in the manner of draining them, freeing them from water, or working, or smelting them? are there any still required? have all the hills and mountains been yet examined, with regard to their mineral contents?

7thly. Have any collection or cabinet of the fossils of each county as yet been formed? let samples of each, docketed with the name of the place in which it was found, be sent.

Much information, relative to these inquiries, may be found in the Philosophical Transactions, histories of particular shires and counties, as Cornwall, Derbyshire, &c.; tours through England, Wales, and Scotland, the works of Woodward. A committee may perhaps be named, to examine these, and arrange the particulars found in each shire, which might perhaps help the persons, to whom queries are to be addressed, to recollect and find them.

These are the particulars which at present occur to me, they may be digested, enlarged, and perhaps better methodized in a committee. When answers are had, which at farthest may be in a year or two, a mineralogical map of the kingdom may be formed, serving as a fund of information, and a ground of future improvements in Agriculture, commerce, and all the arts.

I have the honour to be your very obedient and humble Servant,

Dublin, November 17th, 1795. R. KIRWAN.

To Sir John Sinclair, Bart. &c. &c.

actual state of every parochial district in the kingdom, and the circumstances of its inhabitants.

Under one or other of these heads, every point of real importance, that can tend to promote the general happiness of a great nation, seems to be included.

Investigations of so extensive and so complicated a nature, must require, it is evident, a considerable space of time before they can be completed. Differing indeed in many respects from each other, it is better perhaps that they should be undertaken at different periods, and separately considered. Under that impression, the Board of Agriculture has hitherto directed its attention to the first point only, namely the cultivation of the surface, and the resources to be derived from it.

That the facts, essential for such an investigation, might be collected with more celerity and advantage, a number of intelligent and respectable individuals were appointed, to furnish the Board with accounts of the state of Husbandry, and the means of improving the different districts of the kingdom. The returns they sent were printed, and circulated by every means the Board of Agriculture could devise, in the districts to which they respectively related; and in consequence of that circulation, a great mass of additional valuable information has been obtained. For the purpose of communicating that information to the public in general, the Board has resolved to publish the survey of each county, as soon as it is brought to a state fit for publication. When all these surveys shall have been thus reprinted, it will be attended with little difficulty to draw up an abstract of the whole (which will not probably exceed two or three volumes quarto) to be laid before his Majesty, and both Houses of Parliament; and afterwards, a General Report on the present state of the country, and the means of its improvement, may be systematically arranged, according to the various subjects connected with Agriculture. Thus every individual in the kingdom may have,

1. An account of the husbandry of his own particular county; or,
2. A general view of the agricultural state of the kingdom at large, according to the counties, or districts into which it is divided; or,
3. An arranged system of information on agricultural subjects, whether accumulated by the Board since its establishment, or previously known;

And thus information respecting the state of the kingdom, and Agricultural knowledge in general, will be attainable with every possible advantage.

In reprinting these Reports, it was judged necessary, that they should be drawn up according to one uniform model; and after fully considering the subject, the following form was pitched upon, as one that would include in it all the particulars which it was necessary to notice in an Agricultural Survey. As the other Reports will be reprinted in the same manner, the reader will thus be enabled to find out at once, where any point is treated of, to which he may wish to direct his attention.

PLAN OF THE REPRINTED REPORTS.

Preliminary Observations.

CHAP.

I. Geographical State and Circumstances.

SECT. 1—Situation and Extent.
2—Divisions.
3—Climate.
4—Soil and Surface.
5—Minerals.
6—Water.

II. State of Property.

SECT. 1—Estates and their Management.
2—Tenures.

III. Buildings.

SECT. 1—Houses of Proprietors.
2—Farm Houses and Offices; and repairs.
3—Cottages.

IV. Mode of Occupation.

SECT. 1—Size of Farms—Character of the Farmers.
2—Rent—in Money—in Kind—in Personal Services.
3—Tithes.

CHAP.

4—Poor Rates.
5—Leases.
6—Expence and Profit.

V. Implements.

VI. Inclosing—Fences—Gates.

VII. Arable Land.

SECT. 1—Tillage.
2—Fallowing.
3—Rotation of Crops.
4—Crops commonly cultivated; their Seed, Culture, Produce, &c.*
5—Crops not commonly cultivated.

VIII. Grass.

SECT. 1—Natural Meadows and Pastures.
2—Artificial Grasses.
3—Hay Harvest.
4—Feeding.

IX. Gardens and Orchards.

X. Woods and Plantations.

XI. Wastes.

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* Where the quantity is considerable, the information respecting the crops commonly cultivated, may be arranged under the following heads.

1. Preparation $\left\{\begin{array}{l}\text{tillage,}\\ \text{manure.}\end{array}\right\}$
2. Sort,
3. Steeping.
4. Seed (quantity sown)
5. Time of sowing.
6. Culture whilst growing $\left\{\begin{array}{l}\text{hoe,}\\ \text{weeding}\\ \text{feeding.}\end{array}\right\}$
7. Harvest.
8. Thrashing.
9. Produce.
10. Manufacture of bread.

In general the same heads will suit the following grains: Barley. Oats. Beans. Rye. Peas. Buckwheat.

Vetches - Application.

Cole-seed $\left\{\begin{array}{l}\text{Feeding,}\\ \text{Seed.}\end{array}\right\}$

Turnips $\left\{\begin{array}{l}\text{Drawn - - - -}\\ \text{Fed - - - - -}\\ \text{Kept on grass - -}\\ \text{—— in houses - -}\end{array}\right\}$

CHAP.

XII. Improvements.
  SECT. 1—Draining.
    2—Paring and Burning.
    3—Manuring.
    4—Weeding.
    5—Watering.
    6—Embanking.

XIII. Live Stock.
  SECT. 1—Cattle.
    2—Sheep.
    3—Horses, and their Use in Husbandry, compared to Oxen.
    4—Hogs.
    5—Rabbits.
    6—Poultry.
    7—Pigeons.
    8—Bees.

XIV. Rural Economy.
  SECT. 1—Labour — Servants — Labourers—Hours of Labour.
    2—Provisions.
    3—Fuel.

CHAP.

XV. Political Economy, as connected with or affecting Agriculture.
  SECT. 1—Roads.
    2—Canals.
    3—Fairs.
    4—Weekly Markets.
    5—Commerce.
    6—Manufactures.
    7—Poor.
    8—Population.

XVI. Obstacles to Improvement; including general Observations on Agricultural Legislation and Police.

XVII. Miscellaneous Observations.
  SECT. 1—Agricultural Societies.
    2—Weights and Measures.

Conclusion.—Means of Improvement, and the Measures calculated for that Purpose.

Appendix.

Perfection in such inquiries is not in the power of any body of men to obtain at once, whatever may be the extent of their views or the vigour of their exertions. If Lewis XIV. eager to have his kingdom known, and possessed of boundless power to effect it, failed so much in the attempt, that of all the provinces in his kingdom, only one was so described as to secure the approbation of posterity;* it will not be thought strange that a Board, possessed of means

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* See Voltaire's Age of Lewis XIV. vol. ii. p. 127, 128, edit. 1752.

The following extract from that work will explain the circumstance above alluded to.

"Lewis had no Colbert, nor Louvois, when about the year 1698, for the instruction of the Duke of Burgundy, he ordered each of the intendants to draw up a particular description of his province. By this means an exact account of the kingdom might have been obtained, and a just enumeration of the inhabitants. It was an useful work, though all the intendants had not the capacity and attention of Monsieur de Lamoignon de Baville. Had what the king directed been as well executed in regard to every province, as it was by this magistrate in the account of Languedoc, the collection would have been one of the most valuable monuments of the age. Some of them are well done; but the plan was irregular and imperfect, because all the intendants were not restrained to one and the same. It were to be wished, that each of them had given, in columns, the number of inhabitants in each election; the nobles, the citizens, the labourers, the artisans, the mechanics, the cattle of every kind; the good, the indifferent, and the bad lands; all the clergy, regular and secular, their revenues, those of the towns, and those of the communities.

"All these heads, in most of their accounts, are confused and imperfect; and it is frequently necesso extremely limited, should find it difficult to reach even that degree of perfection which, perhaps, might have been attainable with more extensive powers. The candid reader cannot expect in these Reports more than a certain portion of useful information, so arranged as to render them a basis for further and more detailed inquiries.* The attention of the intelligent cultivators of the kingdom, however, will doubtless be excited, and the minds of men in general gradually brought to consider favourably of an undertaking, which will enable all to contribute

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sary to search with great care and pains to find what is wanted. The design was excellent, and would have been of the greatest use, had it been executed with judgment and uniformity."

* The County Reports, as originally drawn up, were circulated merely as a foundation for procuring additional information; and indeed, when corrected, they ought to be considered only as chapters of a great work, and not as distinct publications. Even in their original state, however, they are extremely valuable; and Dr. James Anderson, who, in consequence of his being employed by the Board, had an opportunity of perusing them, thus states his opinion of the mass of information which they contain. "The Board of Agriculture," he observes, "is an institution, which if its inquiries shall be prosecuted for a sufficient length of time, with due caution and energy, will be productive of national benefits, greater than perhaps have been derived from any other political institution, in modern times. For although the money, which has been expended on this department, when compared with that bestowed on any other national establishment, may be considered as nothing, yet, in consequence of its exertions, continued for the course of little more than one year, a body of authentic facts, respecting the agricultural and internal economy of this country, have already been laid before the public, greater than was ever obtained in any other nation since the beginning of time; on which facts the political inquirer can ground his reasonings, on many of the most important topics, that can ever engage his attention, with a degree of certainty he could *never* have otherwise obtained. In consequence of this, many ideal phantoms of proposed national aggrandizement will be banished, and, in their stead, plans of substantial improvement will be brought forward, which could not otherwise have been adopted; because the obstructions, which repress alike the suggestions of genius, and the hand of industry, would have remained unknown, as they hitherto have been, in every European nation, and of course entirely unattended to by those classes of men, who alone have power to remove them.

"As a striking illustration of the truth of these assertions, (he goes on to remark) that the essay he submits to public consideration, (on the obstacles to the advancement of Agriculture in England) will consist of little more than a compressed view of the facts that have been brought to light by the Agricultural Surveys *already printed*, some of which were facts unknown, or never adverted to, by every person who should read his publication: for I presume, (he observes) that no one person in any situation in Britain, could have otherwise had an opportunity of observing the whole; and innumerable persons no doubt exist, who are deeply interested in the discussion, who never before had adverted to one of them: and who of course could never be aware of the very important consequences that flow from them."

The Doctor then proceeds to state the principal obstructions to Agriculture, which occurred to him in the course of a careful perusal of those Reports, in which the reader will find much useful information.† If such a paper could be drawn up, with the assistance of the original sketches of those Reports alone, what light may not be expected, when they are reprinted in a corrected form, with all the additional materials, which have been collected, in the course of their circulation.

† See Essays relative to Agriculture and Rural Affairs, Vol. 3. p. 4.

to the national stores of knowledge, upon topics so truly interesting as those which concern the Agricultural interests of their country; interests, which on just principles never can be improved, until the present state of the kingdom is fully known, and the means of its future improvement ascertained with minuteness and accuracy.

The necessary inquiries into the riches of the surface, will soon be completed; and if the other inquiries above hinted at, are gone into with equal energy and spirit, this kingdom may reach a degree of political strength, and its inhabitants will enjoy a height of public and of individual happiness, which it is believed has never hitherto been attained in any other country.

APPENDIX. O.

Plan of an Agreement, among the Powers of Europe, and the United States of America, for the Purpose of rewarding Discoveries of general Benefit to Society. By the President of the Board of Agriculture.

The plan of establishing a Board of Agriculture, for promoting the internal improvement of Great Britain, though long a favourite idea of the person who brought forward that proposal, yet could never have been carried to its present state of perfection, had it not been for an extensive tour which the Author made, through some of the most interesting parts of of Europe. In the course of that tour, he saw several valuable institutions for public purposes, from each of which, as well as from those at home, he took such hints as seemed to him likely to be of service, and formed on the whole the plan of an establishment, on a scale sufficiently extensive, to merit, he flattered himself, the approbation of a British Senate: and Parliament was at last prevailed upon to adopt it, not, however without some opposition, and merely as an experiment. The result, he flatters himself, must be in the highest degree satisfactory to those who wished well to such an undertaking. The Board was constituted only on the 4th September, 1793, and already a greater mass of Agricultural and Statistical knowledge has been collected, in little more than a year and a half, than ever was accumulated before in so short a period.

The improvement of his native country, was not the sole object, which the Author, however anxious to promote it, had in view, when he formed this establishment. He knew well that it would soon prove of general benefit to society. The carrying on, therefore, a correspondence with foreign states, disposed to enter into such an intercourse, was a part of the original plan. A Secretary, acquainted with several of the most important languages in Europe, was attached to the Board, for the purpose of conducting that correspondence; and though the war, so generally raging on the Continent, has given a different direction to the minds of men, and greatly impeded such an intercourse, yet much useful information has been received from, and communicated to, foreign countries, since the Board was established.

There are some points connected with the improvement of a country, which are only applicable to particular places; an improvement, for instance, in the culture of the vine would be of no use to the northern parts of Europe; nor would it be of any consequence in the southern, that the Scotch fir could be made doubly valuable, by using the branches of young fir, as an article of food for sheep or cattle, in the winter season, when it is so difficult to support them. There are many objects, however, of equal importance to all countries, and in the improvement of which every nation is equally interested; for example, any discoveries in consequence of which a greater quantity of animal or vegetable food can be produced for the use of man,—any improvement in medicine,—in the means of saving fuel,—in the construction of houses for the lower orders of the people, &c. and many other particulars of a similar nature.

Discoveries made in one country, gradually reach another: but the interval is often tedious, and the loss thereby sustained is great; whereas if the progress could be more accelerated, the consequences might be in the highest degree beneficial, not only to the country that receives, but to the one that makes the discovery. For no individual, or even nation, can carry any art or new invention to its ultimate state of perfection. It must be improved upon for that purpose by the investigation and experience of others.

Deeply impressed with the justness and importance of these ideas, I take the liberty of submitting to the consideration of those intrusted with the government of this, and of other states, the propriety of a general Agreement among the Powers of Europe, and the United States of America, for the purpose of rewarding those who make any useful discovery, interesting to the species at large, in Rural Economy, in Medicine, or in the Useful Arts, and that every means be taken to have the same rapidly extended, and brought to its ultimate state of perfection.

Such an agreement would be attended with but little expence to the different powers who entered into it, whilst the credit, the satisfaction, and the benefit which each government would ultimately derive from such an understanding would be of infinite value.

If each power should agree to pay a sum, call it from £ 50. to £ 500: or £ 1000. according to the amount of its revenue, and to the advantage it would be likely to obtain from any new invention of the nature above alluded to, it would be of little consequence to each, whilst the total would be of considerable value to the fortunate discoverer.

The attention of mankind being directed to such useful objects, it is impossible to say to what perfection the arts necessary for their comfort and sustenance might be carried.

The desire for fame and emolument, and the emulation of many nations, rivalling each other in such arts, would soon produce discoveries, the importance of which can hardly be estimated at present.

And such an understanding, though it would not probably put a stop to war, yet might have the effect of rendering wars less frequent, and less ferocious.

I was led to bring forward such reflexions, sooner than otherwise I had intended, in consequence of having lately succeeded in obtaining from Parliament, the grant of £ 1000. to Mr Joseph Elkington, so celebrated for his skill in Draining, and knowledge of springs.

The art which he has acquired in such perfection, would be as useful to other countries, as it is to Great Britain, and no reason can be assigned, why it should not be immediately extended all over Europe and America.

Here there can be no rivalship; for the Agricultural prosperity of one country can do no injury to another; and indeed it may be of considerable service, in times of scarcity for instance, from which the most fertile cannot always be exempted.

Let us suppose, therefore, that such Powers as chose to enter into the Agreement above suggested, in addition to the £1000. already voted by the British Parliament, were to begin the proposed agreement, by subscribing each a sum of money to Mr. Elkington, on his disclosing his discoveries in so clear a manner, that other nations might avail themselves of the same valuable art.

Can any discovery be of more general utility? In a moist country, it is well known, that nothing is so much to be wished for as to get rid of water. In a country that is dry and parched, what can be more desirable than to obtain the command of springs?—In both these respects, there is every reason to believe, that Mr. Elkington has reached a very high, and hitherto unequalled, pitch of excellence.

If examples of the benefit to be derived from such an agreement, in regard to other matters, independent of Agriculture, is wanting, it may be sufficient to remark, that an American physician is said to have found out a valuable remedy for the cancer, and a German, a very effectual palliative, if not a cure, for the stone and gravel. As these are acknowledged to be perhaps the most dreadful disorders to which the human frame is subject, surely such discoveries are objects of general concern, and if brought to perfection, ought to be rewarded by every civilized power in the universe.

The only objection to such a measure, is, the risk of imposition on those Powers, who live remote from the place where such discoveries may be made. But surely those who trust their respective Ministers with the management of great political concerns, may safely confide to them the disposal of any sum that may be necessary for such a purpose. Besides, it would be desirable to have a Board of Agriculture and Internal Improvement established in every country, for the purpose of carrying on a correspondence and intercourse between the different States of Europe and America, on subjects of general moment, and to the examination of such a body, any discovery of a doubtful nature might be referred.

If the measures above hinted at were adopted, a new scene in politics might be the happy consequence, and the rulers of nations might in future boast,—not of their numerous fleets,—not of their gallant armies,—not of extended commerce,—of splendid or luxurious arts, or acquisitions by intrigue or conquest,—BUT OF THIS,—*That within their respective dominions, a greater number of human beings, enjoyed all the blessings of political society, in greater perfection, than hitherto, they had ever been enabled to attain, in any former period of history.*

London,
1*st July*, 1795.

CONCLUSION.

The preceding papers, will sufficiently explain, the various measures, which have been recommended to the attention of the Board of Agriculture, for the purpose of promoting the internal improvement and prosperity of the country. It may not be improper, however, here to recapitulate them, in order that the reader may have, under his eye at once, a general view of the whole system.

1. The first object, is the one which the Board has already sanctioned, namely, that of inquiring into the riches to be obtained from the surface of the national territory. With that view, it is proposed, to lay before the public, as expeditiously as possible, corrected Reports of the Husbandry of each particular county, and the means of its improvement; and some steps also are taking, towards preparing an arranged system of information, on Agricultural subjects. The farmer will thus be furnished, with all the knowledge he could possibly wish for, regarding either his own particular district, or the art of husbandry in general, and the landlord will have easy access, to any information he can require, for managing or improving his property, in a manner infinitely more to his own benefit, and to the public advantage, than it is possible for him, at present, to imagine.

2. The mineral or subterraneous treasures of which a country is possessed, is the next great object of inquiry, and a most important one it is, for in many cases the riches of the surface, in point of real value, is nothing compared to what may be found under it. A complete and regular survey of our subterraneous wealth, would be the means of furnishing greater sources of opulence to this country, than the acquisition of the mines of Mexico and Peru. In fact, Great Britain, at present owes, no inconsiderable portion, even of its agricultural and commercial

wealth, to its fossil and mineral treasures; and the great additions which would necessarily arise in consequence of the proposed survey, would be felt, throughout every productive artery of our national prosperity.

3. Another separate head of inquiry, and source of incredible wealth, is, the riches to be derived from the streams, rivers, canals,* and inland na-

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* I think it necessary here, to give the reader some faint idea, of the astonishing advantages to be derived, merely from applying the *waste water* of canals to the purposes of irrigation. The following is a circular letter written at the desire of the Board upon that subject, and the observations thereon by a very intelligent engineer.

I. Circular Letter to the Canal Companies.

GENTLEMEN, *Board of Agriculture, July,* 1796.

"I am requested by the Board of Agriculture, to submit to your consideration, a subject of considerable national importance, that of applying navigable canals to the purpose of irrigation, or of watering land. We have every reason to believe, that the canals already formed, or now forming, might be made applicable to this very material use, without any injury to their common destination; for though it might not be proper in many cases to spare water in summer, yet in winter and spring, when most abundant and least essential to navigation, its utility, if thrown on the adjacent lands, would be indisputable; and by this means a considerable revenue might accrue to the owners of canals, by granting certain quantities of water weekly, or monthly, to the proprietors of the adjacent ground, and infinitely to the advantage of the public. Should this idea meet with your approbation, the Board would apply for a general act of Parliament, to permit the proprietors of canals to make this use of their waste water, and for any other general regulations respecting canals, which may be thought necessary, and which you may have the goodness to suggest. The act might pass so early, that it might be in your power, in the course of the ensuing winter, to try experiments on the practicability of the measure. Engineers, skilled both in navigation and in irrigation, would soon ascertain what quantity of water could be spared from each canal, at the different seasons of the year, and the extent of land over which it might be conveyed. It may not be improper to inform you, that this use of navigable canals, has long been common, and carried to a considerable extent in the Milanese, where the rents paid for water thus taken, have in some cases equalled the expence of forming the navigation; that this plan, has rendered that part of Italy, among the most fertile and opulent in Europe, and contributed more to the improvement of the country, than any other idea that has been adopted. It is from water-meadows thus obtained, that the celebrated Parmesan cheese, is, in many instances, produced.

"The anxiety felt by the Board of Agriculture for extending the benefits resulting from your useful undertakings to new objects, which might prove equally beneficial to yourselves and to the public, has occasioned this trouble on the part of Gentlemen, &c.

"P. S. I think it proper to add, that there are some useful works, in the German, Dutch, and Swedish languages, on canals, embankments, and the like, which it would be worth while vigations, coasts, and fisheries of the kingdom. That many additional millions, per annum, might be obtained by a proper attention to those unbounded sources of national riches, can hardly be questioned. By extending inland navigation, by improving the harbours on our coasts,

for the Canal Companies in England to join in having translated. If each Company would subscribe for from 10 to 50 copies, such translations might be obtained and printed."

II. *Extract of a Letter from an intelligent Engineer, on the above Subject.*

"I have received your circular letter respecting the plan of watering of land by the means of navigable canals; on which there ought only to be one opinion as to its being a point of the greatest importance, which could have come under the consideration or patronage of the Board of Agriculture; and if any obstacles should occur, they must arise from prejudices which time will wear off; for that such a rational application of the waste water of canals, will at one period or another take place, seems not to admit of a doubt.

"In Europe, the improvements in the Milanese, are a striking instance of the fertility which may be created by such an application of the waste water of canals; and if any thing else was wanting to add to this conviction, the economy of the waters of the Nile may be produced as another instance, and perhaps even a more striking one than the Milanese; as in this last case, an unrivalled fertility was spread over the sandy wastes of Egypt and the Thebais, and even over the scorching plains of Lybia.

"The lake Mœris, formed as a reservoir in the bosom of barren mountains, is a feature which cannot be mistaken; and it ought to prove an useful lesson for the management of rivers in general, most of which, in some place or other, may be treated in the same way: the excess of floods may be drawn off, and in dry seasons water may be issued for the use of the navigation of the same rivers, for the working of mills, for the purposes of watering land, and for supplying navigable canals.

"The very lakes which now exist in Great Britain, may in general, and at a very moderate expence, be raised a few feet above, or drawn off a few feet below, their usual level, and this upon extensive surfaces, would supply a quantity of water which would produce much fertility to the countries which lie below that level.

"A general survey of the kingdom, directed so as to ascertain the comparative levels of its surface, would be a very necessary step towards the general management of water; and this survey should be made with great accuracy, and noting the leading objects, and peculiar advantages and disadvantages in each district, with their relative situations as to the connecting districts; and from these separate Reports and Surveys, a general arrangement of the whole might take place, and many useful plans be pointed out.

"In general, I should suspect that in this business, there are evils to be guarded against, and which are likely to arise from two very opposite classes of people. In the one class may perhaps be ranged, those land-owners and mill-owners, whose minds are not so sufficiently enlightened as to be sensible of the general utility of the scheme, or the benefits which must eventually and by carrying our fisheries to the height of which they are capable, it is impossible to say, what additional treasures might not be accumulated. That, however, must entirely depend, on our making the necessary inquiries, and following up a regular system of improvement.

4. But riches alone, are not sufficient, to make either an individual or

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arise to themselves; and they, of course, will be averse to submitting to any alterations which may interfere with the water.

" And the other class will consist of projectors and projecting engineers, who may be in any shape engaged in the arranging or executing this plan, and who being wholly engrossed with new schemes, may be led to despise real obstacles, and to give a favourable complexion to impracticable projects.

" As the first, it is hoped, will not form a majority of the community, an act of parliament will remove all legal obstructions as far as it respects them; and a perseverance in repeating calm demonstrations, and the sensible operation of the scheme itself, must in the end, convince them that so far from this plan proving an injury or injustice, that not only the country at large demands it, but that they will be benefited individually; indeed there is no reason but their own obstinacy, why they should not be benefited immediately, and that in a double capacity; because as canal stock is transferable, and fluctuating, these land-owners, and mill-owners may become proprietors of the canal navigations, and so receive a share of the advantages arising from this distribution of water, and they may likewise, in this way, have a voice in the direction of its operations.

" And besides this, canal stock seems more than any other property, to connect the apparent interests of the greatest number of individuals, with the improvement of the land and manufactures of the countries through which the canals pass, since it is in proportion to this prosperity that the canal proprietors can receive their pecuniary advantages from an increased tonnage: thus a number of persons residing in distant quarters of the kingdom, who probably could never have become land-owners, are in this way intimately connected with the improvement of the land, &c. This is a circumstance that I take the liberty of mentioning more at length, because I do not recollect that it has hitherto been taken notice of; and it appears to me of considerable importance. I have for instance, observed, that in a certain inland canal navigation, where there are upwards of 1200 proprietors, most of them people in tolerable circumstances, and in trade, and residing in 12 counties; that all of them are looking with anxiety to the increasing produce and consumption of Cheshire, Derbyshire, Montgomeryshire, and Shropshire, although, if it had not been for this circumstance, very few of them would have known or have concerned themselves about that part of the country.

" With regard to the being led astray by projectors or projecting engineers, this may be in a great measure prevented by the choice in the appointment of the engineers who are to take the surveys, and the committee under which they shall act, and the care to be taken in the comparing and arranging the several Reports and Surveys, and many of the Members of the Board of Agriculture will, from their own local knowledge, be enabled to check any false representation."

a nation happy, and for carrying national felicity to the extent of which it is capable, it is necessary to inquire into the circumstances of the people, and the means of promoting their improvement, in regard to their health, their industry, and their morals.

Hence arises the benefit to be derived, from those statistical inquiries, now nearly brought to a conclusion, so far as regards Scotland, and which, I trust, will soon be extended over the southern part of the kingdom. The advantages resulting from such investigations, need not here be dwelt upon, having already been sufficiently explained.

Lastly, though, when these inquiries are completed, the government will become possessed of all the information this country can furnish, for establishing the happiness of its inhabitants, yet to perfect the whole, it would be desirable, to unite all the civilized nations of Europe, and of America, in rewarding those, who make discoveries of real benefit to society. No single country, can expect to bring all the useful arts to perfection. Some improvements, it may always expect to receive, from other states; and if ingenious men have reason to believe, that any important discovery they make, would be rewarded by other nations, as well as their own, it is difficult to say, to what perfection and extent, the useful arts might speedily be carried. It was the emulation excited among the various states of Greece, that raised the liberal arts so rapidly to a height, in the age of Pericles, which it can hardly be contended, they have ever since reached, in any succeeding era.

I have thus sketched out a system, which, were it carried into effect, would surpass any thing hitherto suggested, not only for making this country happy and powerful, but also for accumulating that information, on the knowledge of which the general happiness of the species must depend. It is impossible for a private and unconnected individual, to do more than to point out the plan, and to declare his readiness to devote his time, and unceasing exertions, to assist in the execution of it. Should it now be arrested in its progress, he has the consolation of thinking, that it will be no fault of his. At any rate, he has taken every measure in his power, to explain the nature and principles of the system, and to make it as generally known as possible, in the hopes, that either under the auspices of the present most valuable Institution, or of some other that may arise, in some future era, or perhaps in some other hemisphere, the plan he has sketched out, that extensive and laborious, but at the same time most important of all sublunary undertakings, may be happily accomplished.

FARM BUILDINGS.

I. *On Farm Buildings in general. By* Robert Beatson, *Esq.*

SECTION I.

The construction and arrangement, together with the situation of farm buildings, are objects of so much importance to the practical farmer, that they merit the most particular attention. On a judicious combination of these, the facility of carrying on his various operations, in a great measure, depends. Yet how few are the examples we meet with of farm offices either commodiously planned, or judiciously situated.

Whether we view this subject as relating to the landlord, to the tenant, or indeed to the public at large, it appears highly interesting.

To the landlord it is a matter of considerable moment, a part of his rents very often depending upon it; for it is natural to suppose that a tenant, especially on a long lease, would give more for a farm if the house and offices were commodious, than if they are so miserably deficient, as most farm offices are. He would even be the more readily induced to take a farm on that very account, and thus the landlord may often lose a good tenant, merely by not having proper accommodation for him.

I have heard farmers declare, that they would willingly agree to pay 5 per cent. or more, on the expences laid out on commodious buildings, over and above the rent of the farm, rather than occupy for nothing those they at present possess; and that they would besides undertake to be at the expence of every ordinary repair during the continuance of their lease. How then can a landlord lay out a few hundred pounds to better purpose than to accommodate his tenants, if he gets not only 5 per cent. on the money thus laid out, but (provided his buildings are very complete) perhaps as much additional rent as will amount to 5 per cent. more.

I am well convinced that the great expence of erecting new farm buildings in the usual way, is a very material obstacle to altering the present form, for there are few landlords who would choose to lay out five or six times the rent of a farm in new accommodations for that farm, if by propping and patching he can, at a small expence, make the old buildings answer.

When we hear of £ 500. being expended in building a barn on a small farm of about £ 100. rent, as is the case in some parts of England, and a thousand pounds laid out on a farm house, it is no wonder that landlords are cautious of engaging in such buildings; and it cannot be supposed that tenants would be mad enough to do so. Hence, perhaps, is the principal reason why the generality of farm houses and offices are in so ruinous a condition. But when farmers can be persuaded that such enormous barns are unnecessary, that their corn can be kept much more secure, and less liable to injury, in a well-aired rick-yard; and that if they have just room enough in their buildings for all the common purposes of the farm, no more is requisite: also, that a neat, small, commodious dwelling house, is fully more comfortable than a large dismal one; then we shall find that landlords will more readily agree to accommodate their tenants, and that instead of those gloomy, preposterous, ruinous, buildings, now a disgrace to almost every part of the kingdom, we shall behold neatness and uniformity, combined with every necessary accommodation; which will afford not only pleasure and comfort to the occupiers, but a beauty and an ornament to the country at large.

That this may be accomplished at a very moderate expence, I hope to be able to prove in the sequel.

So far as any general rule can be given upon this subject, and allowing for circumstances and the variation of prices, I am fully persuaded by the observations I have made in different parts of the kingdom, that in general one year's rent of the farm, if not under £ 70. (or at most two) is amply sufficient for building every accommodation necessary upon that farm, exclusive of the dwelling house: and that one year's rent is enough to build a dwelling house, on all farms not exceeding £ 400. a year (in many situations less may do). And lastly, that £ 500. are sufficient for a dwelling house, and £ 1000. for offices on a farm of any extent.*

To a tenant, the construction and arrangement of his farm buildings, is a matter perhaps of more importance than even to a landlord. After all his toils and labours, and the many anxious and sleepless hours he has passed before his crop has come to maturity, if his offices are insufficient or improperly constructed, he still runs the risk of many inconveniences, and even real loss. The security of his grain, the labour and the value of his horses and other cattle, the safety and duration of his implements, are all dependent on the perfection or imperfection of his offices.

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* In building new farm houses and offices, a great saving of expence will accrue by making use of all the serviceable materials in the old buildings, where such buildings are; and it will astonish many (provided they are fairly dealt with) who have been accustomed to those large, unnecessary, and expensive, buildings commonly used, at how small an expence, comparatively speaking, a new set of

By arranging them judiciously (a matter very little attended to) a great deal more labour may be obtained from his servants, and every operation on the farm will be carried on with more facility and dispatch. For if a barn is set down here, a stable there, a cow-house or feeding house in another place, all without rule or order, and as if chance had set them down, much unnecessary labour will be occasioned, and a great deal of time lost in carrying provender to the cattle, and in keeping them so clean and dry as is necessary towards their health and preservation.

Farm buildings should be proportioned and constructed according to the size and produce of the farm; which, in settling their dimensions and arrangement, must be particularly taken into consideration. If, for example, the farm is adapted entirely to grazing, very few buildings will be necessary, except some sheds, and these will be in use chiefly during the winter season, temporary ones being often erected in the fields for the summer. On farms where cattle are housed only in winter, or in such farms where more buildings are used in winter than in summer, a great expence in roofing may be saved in cattle sheds, by erecting walls only, or having pillars or posts placed and framed in such a manner as to support hay-ricks, peas, or any other sort of ricks that are not intended to be taken down till the spring or summer. This will not only answer the purpose of an excellent warm roof, but will be a very good situation for building such ricks. If, however, the farm is entirely for grazing, as before supposed, there may not be a sufficiency of ricks, unless of the fodder for the cattle, to make such temporary roofs. In that case the sheds must of course have permanent ones, which may be of the cheapest construction. Or if there should be a sufficient number of boards about the farm, as is sometimes the case, they may be laid loosely on, to serve as a roof to the sheds, till wanted for other purposes.

A dairy farm will require a different sort of accommodations, being in general

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offices, or house may be built, having the advantages of such materials near the spot. Workmen, in general, are much averse to using old materials, especially carpenters, who, rather than run the risk of touching a rusty nail, with a hatchet or a saw, will put their employer to the expence of some hundreds of such tools, by condemning the old, and advising him to purchase new timber.

composed partly of the grazing and partly of the arable kind. The cow-houses must be proportioned to the number of cows usually kept, with every other accommodation for carrying on the dairy business, whether as a cheese or butter farm. Small stables and a small barn are sufficient for such a farm. But in an arable or corn farm, which generally partakes of both the other sorts, the buildings must be more numerous, and suited in some respect to all these different purposes. The stables, in proportion to the number of horses or cattle requisite for labouring the farm. The cow-houses and feeding-houses, according to the number of cows generally kept, and cattle fed. The barn and granary, according to the extent of arable land; together with all the other usual accommodations for breeding young horses or cattle, for hogs, poultry, &c. all which must be particularly considered of while planning the farm offices.

Since the invention of thrashing mills, a most material alteration may be made in the construction of farm buildings, particularly in barns. The tedious and laborious operation of thrashing with the flail, made it necessary to have the barn large enough to hold a great quantity of corn in the straw, or at least to contain a whole stack at once; and besides, to have it so lofty as to give sufficient height for raising the flail. This is by no means necessary where there is a thrashing mill; for as the mill, if properly constructed, will thrash the corn as fast as taken in, it is unnecessary to throw in the whole stack at once; and what remains of it in the rick-yard, if any, may be covered with a tarpawling, or painted canvas for that purpose; a thing that every farmer ought to have, being of essential use either in case of a sudden shower in harvest when building a stack or hay-rick, or of leaving one unfinished at night, or any other time.

A thrashing mill not requiring so lofty a barn as a flail, a very convenient granary or store-room may be obtained above the mill, which, in the common way, could not have been had. In short the advantages of a thrashing mill are so numerous, that no farm producing 1000 or 1200 bushels of grain annually, should be without one; but as this very useful machine will be fully described when treating of Implements, the reader is referred to that article for a particular description of it.*

When the plans of any farm buildings are finally determined on, there are many preliminary considerations necessary to be attended to, previous to the commencement of the work. The situation with respect to the quality of the air, the water, materials for building, access and exposure, the soil for laying the foundations upon, the best method of conducting the drains, together with the expence of completing the whole. But as it would far exceed the bounds intended for these general observations, to enter into a detail of these subjects, and as they will all be fully and minutely explained in the Practical Treatise on Rural Improvements (a work now preparing for publication), as also the manner of carrying on the building, laying the ground floors, covering the roofs in various ways, &c. We shall therefore refer to that work for these particulars, and proceed to submit the following remarks on farm houses. Afterwards on farm offices separately, and then on arranging them together in the most commodious manner.

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* See General Report, chapter on Implements: also Practical Treatise on Rural Improvements.

SECTION II.

Farm Houses.

A Farm House ought not only to contain every conveniency for a family, but should have a degree of neatness and uniformity, which, if properly managed, will cost no more than a dull irregular building. Columella says, that " a farm house should be somewhat elegant, to give pleasure to its possessors, and to allure the wife to take delight in it. It should be built on the most healthy spot of the farm, in a temperate air, such as the middle of a hill commonly enjoys, where it is neither stifling in the summer, nor exposed to the rage of winds and storms in the winter."

The size of a farm house should be regulated by the size of the farm, although not so strictly so as the other buildings; a parlour and kitchen, with dairy, closets, and other conveniences, below stairs, and the upper story divided into bedchambers, are sufficient accommodation for any farmer's family. These may be contracted or enlarged according to circumstances, or to the inclination of the proprietor: but it is better to give a little more room than necessary, than not to give enough.

None of the buildings about a farm admit a greater latitude of construction than the farm house; for sometimes a very small house may do for a very large farm; at other times it would require a pretty large house on a small farm, according to the size of the farmer's family, and, perhaps, to the situation in life he has been accustomed to; for there are many very respectable and worthy farmers, whose manners and conversation entitle them to the best accommodation; and it sometimes happens that a landlord will consider this, and build a house for the farmer, instead of the farm.

There is something so pleasing in the appearance of neatness and cleanliness about a dwelling house, that even a stranger transiently passing by, cannot help being prepossessed with a favourable opinion of those within. He passes along with the idea fixed in his mind of prosperity and happiness presiding within those walls. How different the sensation felt on viewing a contrary scene:—a house dismal and dirty, the doors and walls surrounded and bespattered with filth of all denominations, and fragments of broken dishes and dirty dairy utensils scattered in all directions: a scene which must impress on the mind the idea of misery and mismanagement, and a contempt for those slatterns who can suffer such beastliness; for in such cases it is generally the female part of the family who have the merit or demerit of domestic appearances. And how easy a matter it is to constitute the difference: a little care and attention is the whole secret.

It adds greatly to the beauty and neatness of a dwelling house, to have a little plot of garden ground or shrubbery before it: this not only contributes to keep every thing neat and clean in front, but is often easier managed than a garden behind. After feeling the pleasure and satisfaction of keeping this plot in good order, every weed that appears visible from the windows, will be considered as a nuisance, and pulled up accordingly. So great an antipathy to weeds may thus be raised in the farmer's breast, that his efforts for their destruction may even be extended to the fields; and by these simple means a slovenly farmer may be so completely reformed, as not to suffer a weed to be seen on his farm.

Large windows add greatly to the cheerfulness of a farm house. The sashes being placed as near the outside of the wall as possible. The reverse of this is a glaring deformity in most houses in the northern parts of the kingdom. There the windows are so small, and the sashes placed so deep in the walls, that it gives the most disagreeable gloominess to the whole building. This is said to be done with an idea of preserving the sashes from the weather—a most egregious mistake. The sashes are perhaps more liable to injury by being deep in the walls, than by being placed near the outside, for they receive full as much wet, and are not so soon dried.

It is a common practice, and with many a general rule, to build the farm house adjoining to the offices. Where the situation will not admit of a better arrangement, or in a small farm, to save a few roods of building, this may be done; but in general it is better to build the dwelling house, and any other buildings with chimneys in them, a little way detached from the farm offices, not only on account of the danger arising from fire, but of the disagreeableness (perhaps unwholesomeness), of living in a dunghill, or in the midst of cattle and swine.

If a farm house, for the sake of uniformity, is to be built adjoining the farm yard, there should be a considerable length of wall at each end of it, to unite it to the offices. But it is certainly better to make the house a little distance from the wall of the yard, and whether that distance is ten feet or fifty feet, there can be little or no difference with respect to convenience. At the same time it is by no means advisable that the farm house should much exceed fifty or sixty yards from the offices, as there might unquestionably some inconvenience arise if beyond that distance.

In the annexed plans of farm houses, four things are particularly attended to in their construction:—simplicity, uniformity, convenience, and cheapness. In delineating such buildings, therefore, there is not that latitude given for a display of those architectural ornaments, which, in a higher sphere of buildings, are so pleasing to the eye, and so truly beautiful when disposed by the hand of a skilful architect. Such ornaments are unnecessary in farm buildings, and are therefore, in the following sketches, entirely omitted. At the same time a strict attention to uniformity is particularly observed; and although the windows are in general made something wider in proportion to their height, than is permitted by the rules of architecture, in order to answer the purpose of giving as much light as possible (the chief use of windows), it is however hoped, that no very great or offensive deviations are made from those rules, even in that case.

The accommodations are calculated to be as convenient as possible, in the family way; and by making the ground-floors at least 16 inches, or two steps, above the level of the ground, and taking proper care to lay those floors,* a great deal of that dampness (and consequently unwholesomeness) so often complained of will be prevented.

Many people prefer gable ends, as in Plate III. For my own part, I am of opinion that hip-roofs, and the vents within the building, are greatly preferable. The hip-roof requires no more materials; and the gable ends not only occasion more expence of building, but an unnecessary addition of weight upon the end walls. Vents built withinside the house are less liable to smoke than when in an outside wall; besides, they contribute greatly to keep the house warm, for they act as flues, and diffuse their heat, in some degree, all over the building.

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* Vide Pract. Treat. on Rur. Imp.

It will be observed that the principal walls are all delineated of the thickness of two feet: that being considered as the best thickness for rough stone walls. Where the stones are good, and of a proper form for building, or where bricks are used, the walls may, no doubt, be thinner: but when too thin, the heat of the sun in summer, and the coldness of the external air in winter, have so disagreeable an effect, by penetrating through, that it is best to err on the safe side, and to make them of a good thickness. This is one of the greatest inconveniences of brick buildings, for in general brick walls are so thin, that these effects are most sensibly felt both in summer and winter.

By making the different apartments and other divisions and conveniences no larger than necessary, the least possible expence will be incurred. The dimensions of these should be proportioned according to the sum intended to be laid out.*

In some parts of the country a house built on the plan, and of the dimensions shown in Plate I. may be completed for about 70 or 80 pounds. In other parts it may cost £150. or more; consequently it would tend only to mislead, by stating either the one or the other as an estimate of such a building. Yet to commence a building, without knowing previously the expence it will cost, should at all events be avoided, as being almost a certain opening for imposition. The best way, therefore, to ascertain this, is to choose a plan; if the proposed building is not of that extent or importance to require the aid of an architect, employ any person conversant in those matters, whose fidelity can be relied on, to examine the ground, and to consult with different tradesmen concerning the expence at which they would undertake to execute their respective parts: a pretty correct estimate may thus be obtained. Or the plan may be laid before different intelligent tradesmen, and their estimates required; and afterwards particularly examined into, not only as to the charges made, but the manner of executing the work; for it is not always the lowest estimate that is to be preferred. If in either case the sum should amount to more than is proposed to be laid out, the dimensions of the plan, and the manner of finishing some of the parts, may be altered, till it is found that it may be executed for about the sum proposed.

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* Very frequently a good plan is thrown aside, merely on account of the expence of putting it in execution; whereas it should be considered, that by contracting the rooms, and the building in general, the same plan might be executed accordingly, at whatever expence may be determined on. The following plans may therefore be varied in size, till of such dimensions as will cost no more than the sum allotted for that purpose. For these reasons, estimates of buildings, in a general view, are really of less importance than most people imagine; there being hardly two counties in the kingdom where the same plan can be executed at the same expence. Even in the same county and in the same parish, the expence will often vary considerably, according to circumstances. The distance from materials, the quality and price of those materials, the goodness or badness of the roads, the nature of the soil to be built on, and consequently the expence of the foundations, the price of labour, the season of the year, and even the state of the weather, all tend to make a difference in the expence of building. It is therefore hardly possible to make a correct estimate, unless the spot intended for erecting the building is known and examined; and an incorrect estimate is much better to be omitted.

Some people will pretend to make an estimate, without even inquiring into those circumstances which must regulate the expence, knowing that when the sum they mention is expended, their employer will not stop the building on that account. It is best to be cautious in dealing with such people, unless they will contract for the sum estimated.

SECTION III.

Barns.

In most parts of England the size of barns, consequently the great expence laid out upon them, appears very far to exceed what is necessary for such buildings. This extent of building is by many thought requisite for the purpose of storing the crop in the straw; a practice so prevalent in many places, that it may not be improper here to examine into the motives for doing so.

The principal reasons why many English farmers are so partial to housing their corn, are said to be these:

First, because it is built at less expence in the house than in the rick-yard. Secondly, because it is better secured, and saves the expence of thatching and of thatch. And thirdly, because it is always at hand to be thrashed.

The first of these reasons appears to be quite imaginary; for surely the care necessary to be taken to build in the barn so compact as is generally done, in order to keep out vermin, as is supposed, and to make it hold the greater quantity, must be attended with full as much expence as building in the rick-yard, perhaps more; for in a large barn, the distance to throw the sheaves, and the number of hands requisite to carry them to their proper places for packing close, will be attended with more expence and labour, and more loss of time, than building in the rick-yard. The second reason seems also to have little weight; for although neatness in every thing is much to be commended, there is certainly no necessity for consuming either so much time or so much thatch in covering stacks as is done in many places. If they are thatched sufficient to keep out rain, and secured properly to resist a blast, it is all that is requisite; but to bestow as much labour and expence on covering a stack which will probably stand but a few weeks, as in covering a permanent building, is surely most completely absurd, and totally inconsistent with that dispatch which ought to be observed in all the operations of farming, particularly in the harvest time, when a farmer should always be in a hurry; for it ought to be a general rule with every farmer, especially at that time, never to lose a moment, but to make the most of the present hour, and on no account to delay or trust any thing to the next; but to consider, however fair the prospect may be, that the next hour, or next day, may be so changed as to put it out of his power to proceed with his operations. On this principle, which is founded on reason and prudence, corn should be put in the stack whenever it is ready for it, which it will certainly be several days before it can be ready to put in a large barn.

No stack should be above 10 or 12 feet in diameter, but most barns are from 20 to 24 feet wide. Is it to be wondered at then, that corn piled to such a thickness contracts a mouldiness? It would be much more extraordinary if it did not, for it is indisputably evident, the nearer the external air is admitted to the heart or middle of the stack or mow, the less chance there is of its being injured, and the sooner it may be stacked. That even farmers themselves are sensible the admission of air is necessary, is clear from the pains they take to have air-holes in their barns: why then will they act so contrary to their own conviction, and to common sense, as to pile up their corn within a building, when it can be so much better aired in the rick-yard; and even to pack it so close that no air can possibly be admitted, when at the same time they have numbers of air-holes for the very purpose of admitting it.

As gaining time to get a crop in safety is so precious an object to the farmer when his corn is cut down, it might perhaps be an easy and a safe method to build it in oblong ricks, rounded at the ends, as shown in Plate V. fig. 1. which might be done very soon after it is reaped. The width of these ricks to be according to the state of the corn, that is, from five or six feet, to about eight feet, but not more; or perhaps as wide as nearly the length of two sheaves, so as to give them a sufficient hold of each other to bind properly. Their length may be of any extent judged most convenient. The advantages of this mode are, 1. That the corn may be much sooner put together in safety than in the common way. 2. That staddles for building these ricks on will be very easily and cheaply erected. 3. That the expence of thatching will be less than in round stacks of the same contents. 4. That they may be finished and thatched at one end, before the other is completed. 5. That when wanted to be thrashed, by beginning at one end no more need be taken down than requisite or convenient to thrash at that time, and that end may be secured from the weather by tarpawlings, or otherwise, or by a sliding cover, on the same principle as his Majesty's ingenious moveable barn, at Windsor. Stacks built in this manner, or even in the common way, are therefore most undoubtedly preferable to housing the corn, and may even be built at much less expence than in a barn.

The expence of thatch is but trifling, for after it comes off the stack it will answer the purpose of litter for work-horses or cattle, equally well as it did before.

If a farmer has not straw sufficient to thatch his stacks, he may, with a thrashing mill, get as much in half an hour, or an hour, as he has occasion for.

Here is another great advantage of a thrashing mill, for, if properly constructed, although it may bruise the straw a little, it does not cut it so as to prevent its answering the purpose of covering stacks; for which purpose oat or barley straw, drawn even, and properly laid on, will do sufficiently well, as can be testified by the experience of many.

The third reason for housing corn, is so much overbalanced by the advantages pointed out in the objections to the other two, that it is unnecessary to enlarge upon it; besides, as no farmer who studies his own interest, and the great importance of dispatch in all his operations, will ever now think of using a flail if he can get a thrashing mill; he must be satisfied that no such reason can, in that case, have the smallest weight.

The great and principal object with a farmer, when his crop is cut down, besides securing it from vermin, is to preserve it in the completest manner from wet or dampness, or becoming mouldy. To attain this, after being properly secured from external moisture, it must be acknowledged, that a free admission of air is absolutely necessary.*

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* It is observed that all sorts of corn in the straw, soon after it is built in a stack or mow, generally sweats a little, or what in some places is called, *comes again*, however dry it may have been put up.

On a tour lately made through great part of England, I had many opportunities of examining the condition of corn and straw piled up in large barns, and I observed but very few instances where the mow had not contracted a considerable degree of mouldiness; besides, they were so infested with rats and mice that the damage done by those vermin must have been immense, although some farmers seemed to consider it as a mere matter of course, and gave themselves no trouble about preventing it.[*]

Security from vermin, and a free ventilation, being so essentially requisite for the preservation of corn in the straw, and as these cannot be obtained if lodged in a barn, so effectually as by building upon proper staddles in a well aired rick-yard, it is hoped that farmers will adopt this method more generally, which would not only be the means of increasing their profits, but by abolishing those large expensive barns,

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This will happen in a greater or lesser degree, according to the state of the atmosphere at the time of its being put together. If this is the case, which every experienced farmer must know, it is evident that without a free admission of air it is hardly possible, after this sweating, to restore the mow to its former dryness, or to prevent it contracting a mouldiness that must greatly injure both the corn and the straw.

[*] It is wonderful that husbandmen should be so blind to their own interest as to suffer the depredations of those mischievous vermin, without using every effort to prevent it. They loudly complain of the hardships of the clergyman's dues, but allow those useless and destructive depredators to prey upon their property, unmolested and uncomplained of. In every county, and every parish, there ought to be associations for the purpose of destroying and annihilating those vermin. We are told, that in one county [†] the tenants in the neighbourhood of a wood, conceiving themselves greatly injured by the immense numbers of crows resorting to that wood, entered into an association for the purpose of destroying them; they assessed themselves at the rate of five shillings, and latterly at two shillings, per plough; out of this fund they paid a bounty of a penny a head for old crows, and from 2*d.* to 6*d.* per dozen, as the season advanced, for young crows. The first six or seven years above 10,000 to 7 or 8000 were destroyed annually; and in thirteen years 76,655 were in all destroyed, the expence of which cost £142. 14*s.* being a trifle short of 38 shillings per thousand; whereas, if the damage done by a crow in one year is estimated at one penny only, the waste committed by a thousand will amount to about 4 guineas.[‡] But the rat is far more destructive than the crow, especially when we reckon the damage they do to sacks, harness, &c. and the difficulty and expence of cleaning wheat when mixed with their dung.

Were such associations general, and a premium given for every rat destroyed, they might soon be extirpated, and an immense quantity of grain annually saved to the nation.

[†] East Lothian.

[‡] See East Lothian Report.

would lessen the expence of farm buildings so much, that a landlord would not consider it so very serious a matter to give his tenants a new and commodious set of offices when necessary. Where the flail is used, the greatest pains should be taken on the construction of the barn-floor; in making which there are various ways practised for rendering them as firm and as dry as possible. Flues, or drying-floors, might also be used, and would be very beneficial in damp seasons. But these subjects will be found more fully explained in another work.*

Notwithstanding the housing of corn in the straw appears so perfectly unnecessary, and even so detrimental, yet as many people are partial to this method, the few following plans are given of barns calculated for that purpose; afterwards are those on a different construction for thrashing mills, the principal difference being, that the latter are not so large, and have granaries above; for where the former kind are already built, there would be no difficulty in erecting a thrashing mill within them also, if required.

SECTION IV.

Granaries.

THE limits intended for these general observations will not permit, nor is it necessary here to enter into, a particular description of the granaries constructed in different countries, and of the various modes there practised for preserving grain.

Perhaps in this country the importance of public granaries is not so great as in many others, and therefore the means of preserving grain for a length of time the less necessary to inquire into.†

Every farmer and dealer in grain knows the care and attention requisite to preserve corn for any length of time, even after it is put in the granary, and also the great extent of flooring necessary to spread any considerable quantity upon.

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* Pract. Treatise on Rur. Imp.

† It is said that in some countries, particularly in several parts of Africa, in Russia, Poland, Switzerland, &c. great expence and labour are bestowed in storing and preserving corn for times of scarcity. In some of those places, large deep pits are dug in the solid rock, with only one entrance at top just wide enough to admit a man. The grain is deposited carefully therein, and the external air excluded by covering the opening very close and tight. Over this a ridge of earth is raised, and well beaten together, to throw off the rain, lest any should soak in. In such pits, which must of course be

With a view of facilitating the labour of frequently stirring the grain, and of lessening the expence of such buildings, a member of the Society for the Encouragement of Arts, Manufactures and Commerce, in a letter to Dr. Templeman, recommends a new-invented granary, of which he gives the following description, but without any drawing.

" The granary I would recommend consists of seven stories of floors, and may be built in any dimensions, provided proper proportions are adhered to. The form of it is square, suppose 14 feet square within the rooms or cells. The distance from the floor of one cell to the floor of that above, is five feet; and the whole building should stand on strong posts, more or less in number, according to its dimensions, at the distance of six feet from the ground. The small stairs, or rather ladder, to go to the several cells, must be fixed to the outside of the building sideways, with a leading rail or rope, to prevent falling. The whole granary to be built of what is generally called brick noggin; that is, it is first framed in strong timber work, and the interstices filled up with brick. The floors, beams, and joists, must be made strong, to bear the weight of the corn. The inside of the cells must be well lined with dry oak board, close jointed, and the outside must be weather-boarded, the boards being strongly nailed to the timber work of the frame, and afterwards payed over with pitch. The floors of the cells must be so contrived as to shelve towards the middle, in which part is to be an aperture six inches square, to be opened or closed by means

in a very dry situation, and the corn also perfectly dry when deposited therein, we are told that grain has been preserved sound for many years.

In other places large granaries are built so as to admit a free ventilation, and a frequent stirring of the corn.

Some authors condemn a free access of the external air, because (say they) it brings with it the eggs of a vast number of different insects, which prey upon and destroy the corn; and they advise against the too great humidity which (they add) always prevails where there are many doors and windows.

Nevertheless, at Zurich in Switzerland, where the granaries are extremely well aired, by a great many square wooden pipes which pass through them, it is said that corn has been known to keep perfectly sound therein upwards of eighty years.

Mons. Du Hamel recommends a mode of preserving corn by ventilation, and mentions several experiments he tried with his ventilators, which he found to succeed, even when in some cases the corn was put up extremely moist.

of a sliding shutter, which must have a long handle reaching, in a groove, without the granary.

" On three sides of the rooms there must be a window, strongly letticed, covered with wire, to keep out large insects and birds, and with strong shutters, to defend the corn from the weather. On the fourth side is a door to each room to open from without. The windows are to be small, and as close as possible to the ceiling.

" Over the upper room or cell is a loft, on the outside of the door of which is fixed a crane, to be worked within by a winch and fliers. The use of the windows in the sides of the rooms is to give the corn all the benefit it can receive from the wind and fresh air. The door, when the cell is empty, admits the workman to sweep, dust, and clean it. The method of managing corn in this granary is as follows:

" When the wheat is properly cleaned it is hoisted in sacks to the loft above, and emptied through a hole for that purpose in the floor. The apertures in the floors of the cells being all open (except the two undermost, which are closed by the sliding shutters), the grain falls through till it reaches the undermost cell but one: when this is filled to the height of about two feet, which may be seen through the windows, the aperture in the floor of the next cell above is shut by its slider. This being filled in the same manner, the next above it is also shut; and so on till the whole are filled, if required, except the undermost, which is left empty. In this condition the corn is left for a week, or more, if it was got in very dry.

" When it is to be stirred the floor of the undermost cell is swept very clean, the door is again shut, and the slider in the floor above drawn back, which allows the corn to fall through into that cell. When the cell above is empty, the slider is again shut, the floor swept very clean, and the slider in the next floor over that is opened. In this manner they are all managed, till at last the uppermost cell remains empty; and the windows having all been open while the corn was falling from one cell to another, render great benefit thereto by admitting the current of air to pass through.

" In about a week more the next stirring is given, which is performed in this manner. Under the aperture in the floor of the lower cell, a proper screen is fixed, at the end of this screen is a conductor or spout, to which a sack is hung, its bottom resting on a miller's hand-barrow; the slider is then drawn, and the corn let fall on the screen, from which it runs into the sack: when the sack is full, the slider is for a moment shut, till another sack on another barrow is put under the conductor; the workman then wheels the first sack to the outside of the granary, and fastening the crane rope to it, it is drawn up by another workman in the loft. The same method is pursued till the lower cell is emptied. If it is necessary to screen all the corn at this time, a small screen is fixed under the aperture of the next cell to be emptied, so contrived as to have a box at the back of it for receiving all the dust, seeds of weeds, &c. that pass between the wires; and this screen is successively fixed under every aperture as the cells are successively emptied. After the first month the corn need be stirred in this manner only once a fortnight, and after the first six months only once a month, unless the weather should prove in autumn very hot and damp."

The advantages of this granary, as described by the inventor, are; that it is built at a small expence; that it contains a great deal of grain in a small compass; and that the grain is easily shifted and ventilated, without the tedious mode of turning it with shovels. This gentleman does not favour us with the slope he gives his floors towards the middle, which must be considerable, in order to make all the grain run out at the aperture; but it is presumed this might be assisted by the workmen, consequently the slope may be the less.

The annexed plan of a granary (see Plate XII.) is perhaps preferable to the above, not only from its cheapness, but from its simplicity, and the easy mode by which the whole body of grain is stirred, and the air conveyed and circulated through every part of it, whatever thickness or depth it is laid, and one floor only is necessary, however high the building may be.

I took this plan from a granary built on his own estate by a very respectable and intelligent gentleman in Cheshire, who has found it to answer equal to his most sanguine expectations.

SECTION V.

Stables.

ALTHOUGH there is no necessity for fitting up a farmer's stables in that style of magnificence which is sometimes bestowed on the accommodation of hunters and race-horses, yet the farmer's horses are nevertheless as much entitled to a comfortable habitation as any of these.

In general farmers are by far too negligent of the accommodation or comfort of their horses. They seem to think that any sort of a hovel is sufficient for a work-horse.

Were they only to bring the case home to themselves, and to consider how refreshing a thing it is, after the fatigues and toils of a day, to have a wholesome room and a comfortable bed to retire to at night, they would perhaps have some degree of compassion on that noble and useful animal, on whose labours and exertions their own comforts so much depend. Eager to obey the will of his (often) ungrateful master, the horse strains every nerve to accomplish his imperious commands. At the conclusion of the day, fatigued, perhaps, till his strength is almost exhausted, how barbarous it is to put this faithful, this valuable servant, into a miserable tottering hovel, where he can neither lay down to take a little rest, nor stand up to taste of his scanty morsel without being wet or besmeared; and this too from the carelessness and ingratitude of those who depend on his exertions for their daily support. If a farmer would only consider how much he is indebted to this precious animal, he never would suffer him to be so shamefully neglected. Is it not the horse that ploughs his ground? is it not the horse that harrows in, and often sows the seed? is it not the horse that carries home the produce? and is it not the horse that sometimes thrashes it out, and always carries it to market? How then can we account for that matchless ingratitude and neglect which is so undeservedly shown to this valuable creature: but that such is the case in many places is a truth too notorious to be denied. If it is likewise considered, with how much more alacrity and vigour a horse will enter the yoke after a night's comfortable repose, than he will do after hardly any repose at all, the farmer will at once see how much it is to his own advantage and profit to pay the strictest attention to the comfort, as well as to the food, of his horses: the difference may be equal to at least an hour's work in a day, or about an eighth part of his labour, the value of which he may easily calculate.

There is nothing more conducive to the health of a horse than a wholesome, dry, and well aired stable, and of such a construction as to keep out the cold in winter, and the heat in summer, with proper drains to carry off every sort of moisture.

We are told by some who have made the management of horses their principal study, that there is no animal delights more in cleanliness, or that more abominates bad smells. And yet how often do we find, even in stables built at a great expence, that they are so wretchedly ventilated, and the effluvia from their dung so disagreeably powerful, we can hardly breathe on entering them. How much more disagreeable and offensive must it be to the horses themselves, who possess so exquisitely the sense of smelling, to be thus doomed for hours and whole nights together, to breathe the offensive vapours arising from their own dung. Yet, as if that were not sufficient to torment their olfactory nerves, a he-goat is often introduced in the stable; an animal which, of all others, has "the rankest compound of villainous smell that ever offended nostril." There are some people credulous enough to believe that such smells are wholesome, and prevent diseases among horses: for my own part I can never be persuaded that any sort of smell, or the breathing of any sort of air, can be half so salubrious or agreeable to horses or other animals, as the pure unadultered air of the atmosphere. For this reason I would recommend all stables to be extremely well ventilated, especially at the top, where the foul and offensive air may much sooner and easier be conducted away, than at any other part.*

As farm stables are almost always built adjoining to other offices, as indeed they ought to be, it is unnecessary here to give any separate elevations or plans of them, or to say any thing concerning the choice of situation till we come to treat of the arrangement of farm offices in general; but as there are several ways of constructing the stalls, it is hoped the following observations will be sufficient to explain them.

The most common way is to make the rack and manger to extend the whole width of the stall, the upper part of the rack inclining over the manger, as represented in fig. 3. *a b* being the rack, and *c* the manger. Although this is the most general, it is the worst of all constructions, nor is it the least expensive.

Servants are for the most part so sparing of their labour, that in order to save a little trouble they will cram a rack quite full of hay, whatever is its size. Those who are acquainted with the management of horses well know the bad consequences attending this practice, and that it is much better to give a horse little at a time, and often, than to put it in his power to stuff himself with more at once than is good for

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* In every stable there should be a few proper sized windows, in proportion to its extent; which windows ought to be so contrived as to open or shut at pleasure, either to admit the air or to exclude the light, as may sometimes be necessary to induce the horses to take a little sleep in the day time. In farmers' stables, when it is not wished to go to the expence of sashes and glass, they may be constructed as shown in Plate XIII. fig. 1. and 2. A is a front view of the window, having a shutter exactly fitted thereto, which is suspended in the middle by two iron pins *b b*, upon which it turns. B is a side view, showing the position of the shutter *c d* when opened a little.

Fig. 1

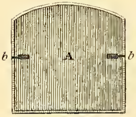


Fig. 2

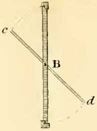
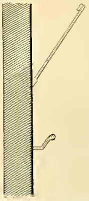


Fig. 3



Inside parts of Stables.

Vide Pages 18 & 19.

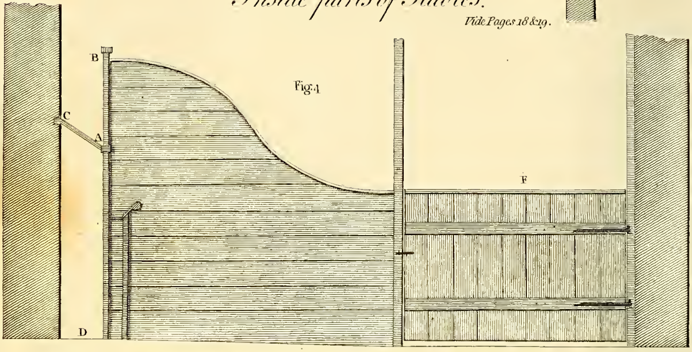


Fig. 4

Fig. 5

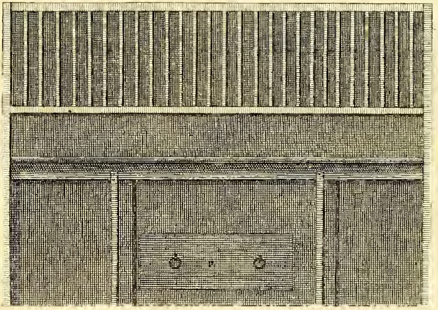


Fig. 6

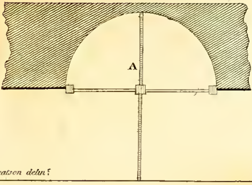


Fig. 7

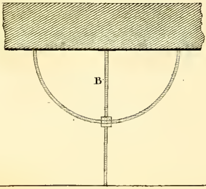
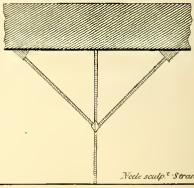


Fig. 8



R. Beatson delin.^t
Neele sculp.^t Strand.

him; besides, when this is the case he generally wastes a great deal of hay which falls down among his litter; and according to this construction of a rack the whole seed is lost, which if saved, and of good quality, might be of some value to the farmer; for an industrious farmer will save every thing he can; and even the seed of the hay used in his stables is very well worth his attention.

When the rack is inclined outwards in this manner, the seed very frequently, too, drops into the horses' eyes and ears, and is attended with very bad consequences.

For these reasons the rack should always stand perpendicular, at the distance of about fourteen inches from the wall, as shown in Plate XIII. fig. 4. where A B represents the spars of the rack; A C is the bottom of the rack, also sparred, in order to let the seeds fall down towards D, from whence they are taken out by removing a shutter E in fig. 5.

Sometimes there is a niche left in the wall for the rack, the spars of which are in that case flush with the inside face of the wall. This niche and rack, which is supposed in the middle of the stall, need only be about 2½ feet wide, and should be carried low enough to admit a small box or drawer in the under part of it, to receive the seed.

These racks are sometimes made in the corner of the stall, so as to make one niche serve two stalls, as fig. 6; and they are sometimes put in the angle, without any niche, in the form of a semicircle, as fig. 7.

In either case, there should always be a division of the deal betwixt them, as A B, fig. 6. and 7; for it is best for the farmer to know what each of his horses eats, which he can never do when two eat out of the same rack and manger.

When such racks are made in the corners of the stalls, I should rather think it would be better to make them straight than circular; if with niches in the wall, to construct them as in fig. 6; and if in the angle of the stall, as in fig. 8.

There may either be a hatch over each of these racks, or a single hatch for putting down the hay in any other convenient part of the stable, with rails, and a sparred bottom to save the seed; but for farmers it is perhaps the better way to have a hatch for each stall, which will require less time to feed the horses than the other way.

It is unnecessary to make the manger the whole width of the stall; a drawer or box about 18 inches long, by 12 inches broad, or even less, is quite sufficient. This drawer should be made so as to be taken easily out to be cleaned, for it is a great objection against standing mangers, that whatever drops from the horse's mouth or nostrils, in case of a cold, or any other disorder, is seldom or never cleaned out.

Some stables are constructed without either racks or mangers: the inner part of the stall is boarded for about three feet high from the ground: the boards about two feet distant from the wall: the hay is put into this place; by which, instead of having to pull his hay from above, as is commonly the case, he takes it from below, which is perhaps not only more natural for a horse, but there will be much less waste than by drawing it from a rack, for every time the hay is drawn from the rack, there is generally some of it drops down and is lost; but when it is taken from below, whatever drops falls back among the rest, and consequently none can be lost. It would be proper to have some small spars at the bottom of this place, within about six or eight inches of the ground, and either with a drawer for the seed to fall into, or a board with a couple of rings, to take away when required; or perhaps a better construction would be, as shown in Plate XIV. fig. 1. nearly in the form of a hopper, being only about 14 inches wide at bottom, which is sparred, and a drawer below it for saving the hay-seed. In the corner of the stall is a little box to hold the horse's feed, as described already; and if a double stall, there is a box in each corner, and the hay-manger, if it may be so called, is divided in the middle, as shown by the dotted line: in general, however, single stalls are to be preferred.

The next thing to be considered, is the manner of paving the stalls. For my own part I think that horses ought to stand in a stable as nearly on a level as possible; nor can there be any reason whatever to the contrary, unless that of carrying off the moisture; which I hope to shew may be much more effectually done by paving the stalls level, than in the common way.

A horse's feet are of so much importance to his master, that no pains should be spared to keep them in the best order, and free from every blemish or complaint, for the least flaw, or the least injury there, may render him incapable of work, perhaps altogether useless.

Nothing can be worse for a horse's heels than to make him stand always on a slope or declivity. It not only occasions grease, cracks, scratches, &c. but by keeping the tendons and sinews of his pastern joints in a constant state of extension, causes a stiffness in those joints, which must prevent him the free use of them. Nor can a horse rest so easily on a slope as on a level.

Some writers recommend that part of the stall whereon the horse lies to be covered

Plate XIV.

Stalls,

Vide Pages 20 & 21.

Fig. 1.

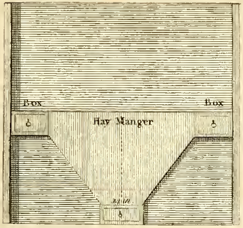
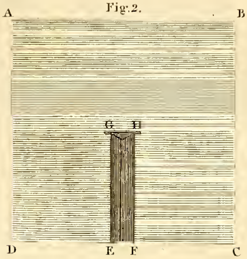


Fig. 2.



Corn Bin.

Pages 22 & 23.

Fig. 5.

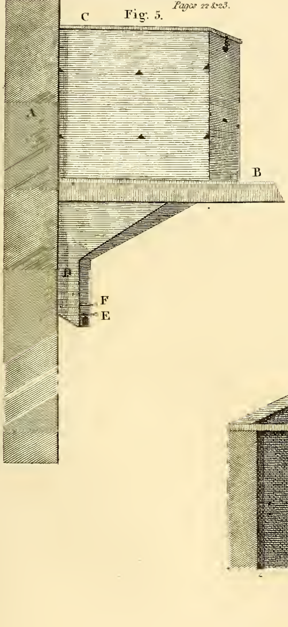


Fig. 3.

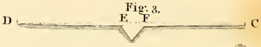
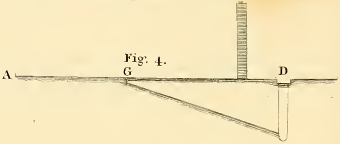


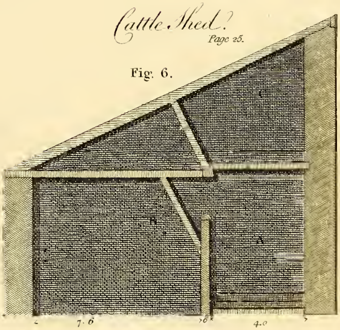
Fig. 4.



Cattle Shed.

Page 25.

Fig. 6.



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with oak plank, and holes bored through to carry off the urine. I cannot entirely approve of this method, not only from the additional expence it would occasion (for the planks must be very strong), but on account of the difficulty or impossibility of cleaning below the planks, which in a short time would occasion a very offensive smell, by the stale urine that would lodge there, notwithstanding there might be a considerable declivity to carry it off.

The method I would recommend is this:—Suppose ABCD, fig. 2. the ground plan of a stall. A B is the inner end, to which the horse is fastened. Let it be paved on a level from A to D, and from B to C, leaving in the middle a small drain EFHG, extending to within about three feet of the inner end of the stall. This drain to be about seven or eight inches wide at top, and to form an angle at bottom, as shewn in the cross section, fig. 3. The bottom of the inner end at GH to be only about three inches deep, and to slope from thence outwards as much as conveniently may be, to conduct the moisture away to a main drain at D, shown in the longitudinal section, fig. 4. into which all the stall drains empty themselves.

These stall drains to be covered with a piece of two inch plank, having as many holes as possible bored through, which may be fastened by a hinge, or two iron pins to turn upon at GH, so that it may easily be raised up when necessary to clean it, or wash it below.

The main drain may either be made at the end of the stall, as at D, or in any other convenient place for conducting away the moisture into a reservoir. If at the end of the stall, it should not be nearer than two feet, otherwise the stale of mares might not at once get into it, unless the pavement without the stall were made to decline towards the drain; but in either case the main drain, which need not be above six or seven inches wide at top, should likewise be covered with plank, full of holes.

Instead of this main drain within the stable, there may be a shallow open drain as usual, with a small iron grating over a hole at the end of each stall drain, to which there may be a declivity from each side of the stall.

It must be observed, that the pavement or floor of the stall, instead of being perfectly level across, should decline about an inch, or an inch and a half from each side towards the stall drain; a declivity which will not be perceivable, but will prevent any water spreading towards the sides, in case it does not fall immediately into the drain.

The advantages of this sort of stall are, that the horse always stands upon a level, and consequently will be less liable to disorders in his feet or heels; that as horses generally stale about the middle of a stall, and as the bottom of the stall drains may have a much greater descent than can be given to the floor of a stall, the urine will be carried off immediately, without spreading to either side, as must be the case in the common method, for which reason horses may be kept dry with less litter, if required.

Stalls should never be less than five feet wide, although I have known them only four feet and a half, and not attended with any inconvenience. The division between them should be so high, at least at the inner part, that strange horses may not see each other.*

Where stallions are kept, or where young horses or others are required to go loose in the stall, it is necessary in these cases to have it so inclosed, that if they were bound, and to break loose, there could be no probability of their hurting each other.

For these reasons there is sometimes a stall or more sparred to the top, or to a sufficient height to answer the purpose required.

Sometimes doors are made, as shown in Plate XIII. fig. 4. at F, which extend from the back post of the stall to the wall of the stable.

At Mr. Eccleston's, at Scarsbrick-hall in Lancashire, the stalls in one of his stables are separated in this manner, which is very convenient, not only in the cases abovementioned, but when there are several mares and foals, to keep each mare and her foal separate from the rest.

In or adjoining to all stables there should be a dry well aired place for keeping harness, &c.; also a proper and convenient situation for a corn bin, both of which places should be very well secured from vermin. If the stable is small, and it is judged most convenient to have the corn bin in the loft above, I would propose it being constructed as in Plate XIV. fig. 5. A the wall of the stable. B the floor of the loft. C the corn bin, with air spouts, as afterwards described. D a spout below the bin, for letting the corn down to the stable. E a slider of plate iron at the bottom of the spout, to open or shut at pleasure, but may be locked by a padlock if necessary. F another thin iron slider, so placed that by shutting it after the spout is filled down to E, there will be contained between E and F exactly a feed of corn, which is taken away by opening E. Then E being again shut and F opened, another feed is let down, which on shutting F is also taken away as before; and so repeated as often as required.

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* Sometimes stalls are made double, and as farm horses generally work in pairs, each pair that work together have one of these double stalls; for horses are a sociable animal, and it is said they feed better, and are more cheerful when they live in society. But even in this case it is proper they should be fastened to the opposite sides of the stall, and that each horse should have his own rack and his own manger; for although they may seem to have a very great attachment to each other (as it is evident they often have), yet if the dividing of their food is left to themselves, it is more than probable they will quarrel about it, and that the strongest horse will have the best share.

This method would save the trouble of going to the bin above, measuring the corn, and then bringing it down to the stable; and would likewise be done with a great deal more ease and expedition, which are of consequence to a farmer, by saving a good deal of labour where a great many horses are kept, and perhaps a good deal of corn besides.

SECTION VI.

Cow-houses and Feeding-houses (in some places called Byres.)

I JOIN these under one head, because in most respects they resemble each other. The principal difference is, that in some cow-houses there are calf-pens annexed, and perhaps a trifling difference in the construction of the stalls.

The only reason I can assign why calf-pens should be within the cow-house, is that it saves a little trouble to the dairymaid, by having a shorter distance to carry the milk. In general, however, it is a plan not to be recommended.

Every person who has had any experience among cows must know, how naturally, and how forcibly a new calved cow expresses her attachment to her calf. With what care and anxiety, if permitted, she licks it all over, and uses every exertion to protect it from injury. How the tender calf clings to its affectionate mother, as if sensible that to her alone it can trust for protection.—And yet the poor helpless creature is dragged away, and placed perhaps within its mother's view, or at least within her hearing, as if on purpose to augment the pain of her sufferings. Its doleful cries keep alive the pangs of the unhappy cow; she struggles to break the chain that binds her fast, and seems restless and uneasy whenever approached. In such a state of agitation it is impossible she can either feed well, or give that quantity and quality of milk she would otherwise furnish. Where there are many cows kept, and perhaps several of them lately calved, a single calf may keep them all in this restless state. To remedy which, the best way is to have the calves at such a distance, or at least so thick a wall betwixt them that the cows cannot hear their cries. The cow will then soon forget her calf, and will both feed and milk the better for it.

Cow-houses, or feeding-houses, may be built to answer either the one purpose or the other, and may be in the form of sheds, either single or double. In the latter way, a great many cattle may be accommodated at a very small expence of building.

The principal requisites in these buildings are as follows: 1. That they be well aired. 2. That they are so constructed as to require the least labour in feeding the cattle and clearing away the dung. 3. That the stalls be so formed as to keep the cattle as dry and clean as possible, with sufficient drains to carry away, and reservoirs to collect the urine and dung.

With regard to the first requisite, a free ventilation is as necessary in these buildings as in stables. How often do we see, on entering a house where there are a good many cattle or cows, most of them perhaps in the highest state of perspiration, and smoking as if they had been at the hardest labour; at the same time the whole timbers of the roof completely wet by the condensed fumes arising from the heat and breath of the cattle. This can only happen in close buildings, which must undoubtedly be extremely unwholesome, and I should suppose would prevent the cattle thriving so well as they might do.

To a feeder of cattle, who looks eagerly forward to the profits he is to reap, and who estimates every additional pound of weight that a bullock ought to take on each day, it would be well worth his attention to consider, whether any bullock, in a perspiring state, can fatten so well as when kept in a proper degree of temperature. I think it stands to reason he cannot.

When such buildings are in the form of sheds, they are not so liable to this want of ventilation; but wherever the timbers above appear wet by the heat of the cattle, it is an evident proof there should be some additional air-holes, which, in my humble opinion, ought principally to be in the roof, as recommended for stables. If there are gable ends they should have a window in each, as high up as possible, with moveable boards, as in granary windows, which may, by means of a cord or small rod, be easily opened or shut at pleasure.

The advantages of this free and wholesome ventilation to the cattle, must be very

Plate XV

Feeding Houses.

Vide Pages 25 & 26.

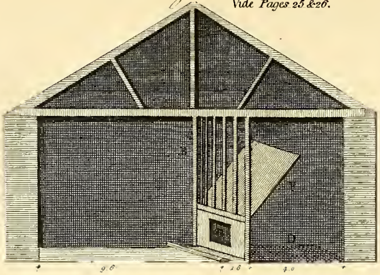


Fig. 2

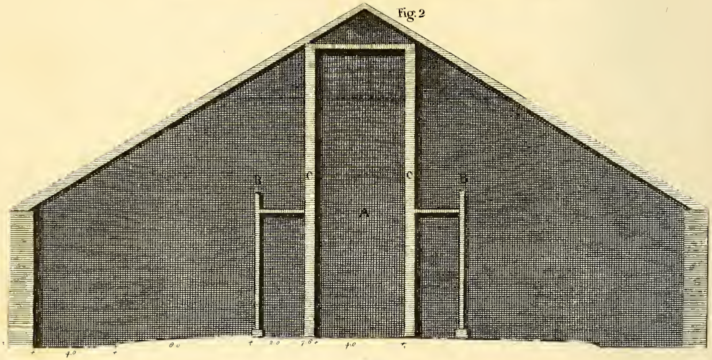
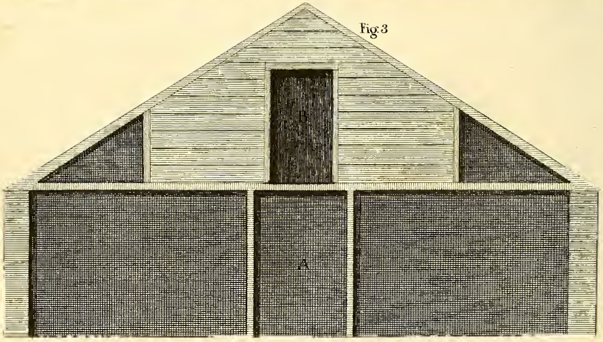


Fig. 3



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evident, and also to the preservation of the timbers of the building; for where the timbers are often wet in this manner, they cannot be of long duration, consequently the expence of repairing or renewing them would be greatly increased.

With respect to the second qualification, there are various constructions of these buildings, but chiefly in the interior part. In many the cattle are fastened to stakes ranged along the wall at the distance of about three feet from each other, with a space of 18 or 20 inches between the wall and the stakes to lay their food in. This is a very general construction in many parts of the country, but it is somewhat remarkable in this, as well as in many other things, that the plan most generally followed, is the very worst that could have been thought of: according to this construction the feeder, except sometimes when the cattle are fed from without, is obliged to go in among them to give them their food, which occasions a great waste of time as well as being attended with many other inconveniences.

No construction can be more commodious than when a sufficient space is left before the cattle, for the feeder to go with a large wheelbarrow to distribute their food. This may be obtained either in single sheds, or in double ones, by making the cattle face each other, and leaving a free space of about four feet to admit a wheelbarrow.

The single ones may be as in fig. 6. A is the passage before the cattle. B the rack for their hay or straw. C a place for laying fodder or litter occasionally. Or it may be constructed as Plate XV. fig. 1. D the passage. E a perpendicular rack, behind which are thin deals all along, in the position F, for laying the hay upon; and under F is a square hole G, opposite each stall, through which the cattle are fed from the passage D. This is a very good construction, and is taken from the new offices at Mr. Bishton's of Kilsal, in Shropshire.

The double sheds are constructed as in fig. 2. A is the passage. BB are the stakes to which the cattle are bound. CC are posts or pillars to support the roof. It might be an improvement here to adopt Mr. Bishton's plan, and make similar racks, with holes below, as in fig. 1.

Another way to construct these double sheds is shown in fig. 3. by which a very convenient loft may be obtained in the roof. A is the passage between the cattle, and B the loft above, which, if close boarded, may serve many useful purposes.

These double sheds are perhaps the best construction for feeding-houses, being not only the most commodious, but less building will be required for the same number of cattle, than by having them all to face one way.

When cattle are fed from the outside through holes left for that purpose, many inconveniences may arise, either in wet weather, in a severe frost, or by a heavy fall of snow. When they are fed within, no sort of weather can occasion any interruption, especially if there is a proper place adjoining, to keep the provender in security and under cover.

In single sheds, it would be convenient to have a place above the cattle, as at C, Plate XIV. fig. 6. for holding occasionally some hay or straw. This place might be boarded, and made to open from without by covers suspended on hinges, which when opened, will afford an easy access for putting in the fodder from a cart. It would there lie ready for the feeder to throw into the racks when required. The roof in this case to be supported by posts or pillars about three or four feet high, on the top of the wall, and placed about eight or ten feet distant from each other, as AAA, &c. Plate XVI. fig. 1. BBB, &c. are the hinges of the covers, and CCC, &c. rings to raise them up. D is one of the covers open, which may be held up in various ways, as by a catch EF, fig. 2. moveable on a small iron pin, the heaviest end E being within the fixed boards, and F without, to catch in a hole in the cover when opened.

Thirdly, great attention is necessary to keep cattle clean and dry. The common method of taking away the dung in wheelbarrows, is attended with a good deal of labour, and where there are many cattle or cows, will require perhaps several men's attendance.*

To preserve dung under cover, would be attended with an expence in the construction of a proper place, that perhaps few would choose to go to; at the same time, there is no object of more consequence to the farmer than preserving the

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* If this labour can be abridged, and one or two men's work saved by a proper construction of building, it will be a great advantage. This should be considered in the original design, before the building is begun, and must be determined in a great measure by the form and situation of the ground. If a proper receptacle can easily be had immediately behind the cattle, for throwing in the dung at once with a shovel, without wheeling it, this would be the easiest way, and will not only save labour and expence, but if properly contrived, the dung will be the better for it. By the common method, the dung is in general so scattered about and exposed to the weather, that a great part of its virtues is exhaled and lost: a matter of great importance to the farmer, for it is not merely the quantity, but the quality also of dung that is to be considered. And I will venture to assert, that in many cases, where dung is allowed to be exposed for a length of time to the weather, and thereby rendered almost a *caput mortuum*, that it will take at least three or four loads of it, to produce the same effect, as one load of good dung, with all its vegetative virtues in full vigour.

Plate XVI

Parts of Feeding Houses.

Vide Pages 26 & 27.

Fig. 2

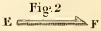

Fig. 1

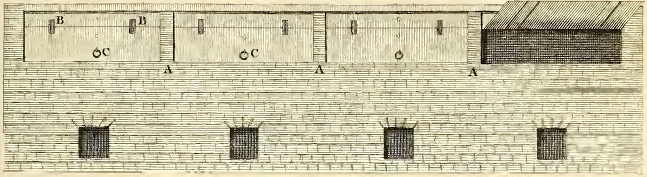

Fig. 3

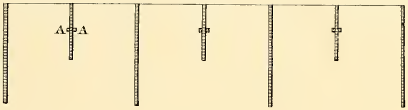

Fig. 4

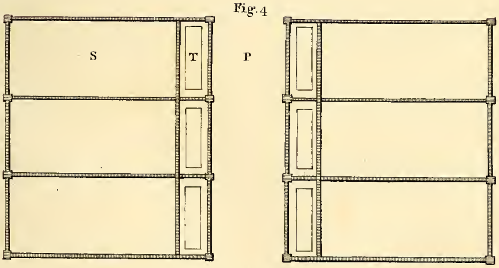

Fig. 5

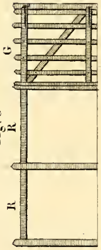

Fig. 6

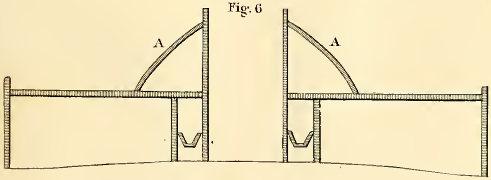

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Plate XVII

Feeding Stalls.

Vide Pages 27 & 28.

Fig. 1

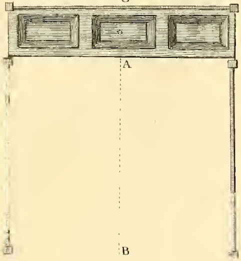


Fig. 2

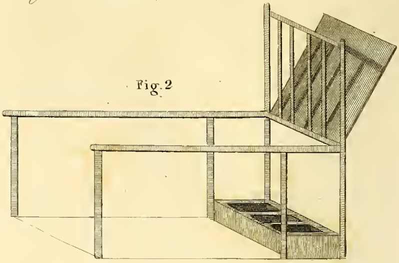
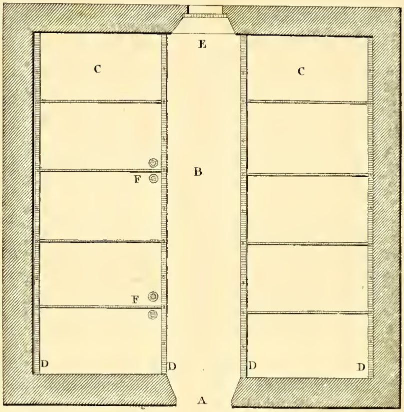


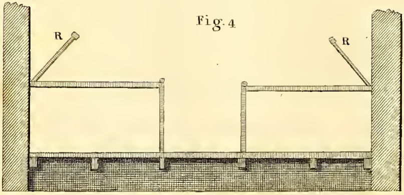
Fig. 3



Calf Pens.

Vide Pages 29 & 30.

Fig. 4



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quality of his manure, but as this subject more properly belongs to another paper, it is unnecessary to dwell upon it here.

The facility of keeping cattle clean and dry, depends very much on the construction and paving of the stalls, of which there are various kinds. In many places, however, there is no such thing known as a stall for cows or oxen, they being bound to stakes, without any division whatever betwixt them. In some parts again, particularly in Cheshire and Lancashire, cows are bound in pairs, at least there is but a very small division betwixt them, as will be seen by fig. 3. which is a plan of these stalls. AAA, &c. being the stakes to which the cows are bound.

In other parts they are not bound at all, but every cow or ox has a separate stall, so divided from the rest by rails of wood, that they cannot get out, and so narrow that they cannot even turn about. Fig. 4. is a plan of these stalls; SSS, &c. are the stalls. P is the passage betwixt them. TT, &c. are the troughs out of which the cattle feed. Fig. 5. is an elevation of the rear of these stalls. R is a rail that lifts out at the end of each stall. Sometimes there is a little door that opens as at G. Fig. 6. is a section of these stalls, in which it will be observed there is a short rail or brace at A, to prevent the cattle touching each other with their horns. Some people are of opinion, that cattle feed much better and quicker in stalls of this kind, than when they are bound.

Double stalls may be made without the short division, as already mentioned. The division between them, however, ought to be sufficiently boarded at the top, to prevent the cattle seeing their neighbours in the next stall. At each stake should be a trough for holding meat, and between these two troughs, another one, common to both cattle, for holding water, with which it may be supplied by a pipe communicating with a cistern or reservoir without. These three troughs may be of stone, Plate XVII. fig. 1. and all of one piece, if thought proper. A perpendicular rack for holding hay or straw may be placed over them, as represented in fig. 2. which is a section or view of one of these stalls, and fig. 1. is a plan. Perhaps it would be an improvement to divide them by a rail in the middle, as at AB, fig. 1. which would prevent the cattle turning too much about, and spreading their dung over the whole stall, for the more they are made to dung in the same place the easier it will be to keep them clean.

Although the double stalls here recommended, are a good deal used for milch-cows in different parts of England, yet they have in general only one trough for each cow, without any for water; nor indeed have I seen any with this conveniency, except at

Burleigh, in Rutlandshire, a seat of the Earl of Winchelsea's, whose offices and farm houses are on an excellent construction, being planned chiefly by himself. His farms too are in the best order; and the experiments he has made on the feeding of cattle, and on raising a crop of turnip, for spring food, among a crop of beans, as well as many other useful experiments, shew the very great attention his lordship bestows on improvements in agriculture.

In paving stalls for cattle, there is generally too great a declivity made, which will cause them always to stand uneasy and uncomfortable; for, when feeding, there cannot be too much attention paid to their ease and comfort, as well as to their food. If they are constantly wet and dirty, or in pain by standing in an unnatural position, it is impossible they can thrive so well as otherwise they might. Yet how little attention is there in general paid to this. One would almost be led to suppose it is the opinion of many, that if they *stuff* their cattle quite full of food, whatever may be its quality, it is all that is necessary. Sometimes they are chained so close to a stake that they can hardly move: nay, it is a practice in some places, to fasten their heads between two stakes, by which they can neither lie down in comfort, nor can they have it in their power to destroy or to dislodge those teazing tormenting vermin which frequently prey upon them. Besides this, they are often suffered to be besmeared to the back, and either smoking with heat for want of ventilation, or shivering with cold. No animal can thrive well under such mismanagement, let his food be ever so plentiful, or of so good a quality; for as an ingenious author says, "to keep cattle clean and well littered, is to them half food."*

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* Cows are more easily kept clean than oxen, for they do not wet their stalls so much; but even oxen, when confined to stand nearly in the same place, cannot wet their stall above half way up, if properly constructed, and that generally about the middle. It is therefore clear, that if the moisture is immediately conducted away, and prevented from spreading, the ox will be easily kept dry. The best way to do this, is in the manner described for paving the stalls of stables, which being there so fully explained, it is unnecessary here to enlarge upon it. Stalls for oxen should be paved in the same manner, but as their dung is of a more liquid nature than that of horses, it would be proper to have some commodious method to carry it off. Perhaps, in some situations, where there is a proper declivity, this might be done by having an iron grating behind each ox or cow, immediately over the stall drain, and as nearly as can be judged to the place where the dung will drop, which, by continuing the drain, or a wooden spout, to a pit or reservoir without, and giving it a sufficient slope, will, with the assistance of the other moisture, run and empty itself therein. If it should require the aid of a broad rake or hoe fitted to the drain, that may easily be applied, especially if those drains are made

The advantages of proper drains to carry off the moisture from within the offices, and reservoirs to collect it in, are very obvious; for without such drains, it cannot be expected that those offices, or the cattle within them, can be kept sufficiently dry. With respect to a reservoir to collect the urine and moisture from the dung, it is of so much consequence to the farmer, that no farm should on any account be without it. Yet it is really wonderful to think, how much this very valuable manure, is neglected, and allowed to run to waste. It would even appear that many farmers took a vast deal of pains to get rid of it, by opening every outlet to carry it off, and conducting it perhaps to some rivulet or stream, that it may the more speedily be taken away from their premises: at the same time, these very farmers are probably sending many miles for manure, not to be compared to it in value. So glaring an inconsistency, it is hoped, there will not in future be many instances of, but that every farmer will consider a proper *urinarium*, as necessary an appendage to his farm, as a kitchen to his dwelling house.

The manner of constructing these, and also the drains that empty themselves therein, so that no rain or other water can mix with the other moisture; as also a plan for collecting the urine in all cities or towns, are fully explained in another publication.*

The next subject to be mentioned is, the construction of calf-pens. Some reasons are already assigned, why calf-pens ought not to be within the cow-houses. Nevertheless, they should be as near as conveniently may be, without being liable to the objections stated.

To lie dry and warm, is of the greatest consequence in the rearing of calves. Some people think it necessary, to accustom a calf to be bound with a halter, from the hour of its being calved. Others again turn them quite loose into the pen, and allow them to range and run about as much as they please. Which of these is the best method, is of little consequence here to inquire into.

The principal thing to be observed in the construction of calf-pens, is the laying of the floor, which should be made of laths or spars about two inches broad, laid at

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open, and covered with a strong plank to take up when necessary. The moist dung being thus carried away, the remainder will be easily removed. Something on this principle, suited properly to the situation of the place, would save a great deal of labour, and very much facilitate the keeping of the cattle clean, and would also be the means of saving a considerable deal of litter, if scarce or dear.

* Pract. Treat. on Rur. Imp.

the distance of an inch from each other, upon joists, so as to make the floor about one, two, or three feet from the ground, as the situation will admit. This not only keeps them quite dry, by allowing all the moisture to pass immediately away, but has the advantage of admitting fresh air below the bedding, and thereby preventing that unwholesome disagreeable smell, too often found among calves; for it is to be understood, that this place below the floor should frequently be cleaned, as well as the floor itself, whenever it becomes wet or dirty; but it is not right to allow the litter to increase to a great thickness, otherwise the moisture will not so easily pass through.

Calf-pens are often made without this sparred floor, and the fresh litter always laid on the old, till the calves are removed, which is but a slovenly practice, and not to be recommended.

Stalls, or divisions, are but seldom made in calf-pens. At the same time, it would certainly be much better to keep the calves separate from each other, by which means they will be more easily fed, and less liable to accidents.

Partitions about three feet high, of thin deal nailed on small posts, might be so contrived as to be moveable at pleasure, to increase or diminish the stall if necessary, according to the age and size of the calf. This may be done as represented in fig. 3. which is the ground plan of a proposed double calf-pen for ten calves. A is the door, B the passage betwixt the pens; CCC, &c. are the pens, shewing the situation of the partitions; DDDD are four joists, in which are several holes, as shown on the plan, for receiving iron pins, at the bottom of the partitions, to keep them in their places; E is a window or door, besides which there should be some other windows or air-holes, as high up as possible.

If it is thought unnecessary to make the partitions moveable, there might be a small round trough, in a circular frame, fixed in the corner of each pen, as at F, for holding the milk, and a door in the next adjoining corner. A small slight rack, for holding a little hay, placed at the upper part of the pen, might also be useful. The troughs should be round, that the calves may not hurt themselves upon them, which they might probably do on the angles if they were square.

Fig. 4. is a section of those pens, in which RR shews the position of the racks.

The advantages of this kind of calf-pens are, that the calves are all kept separate in a small compass, and cannot hurt each other, as the stronger ones sometimes do the the weaker, when confined promiscuously; and their food may be much more easily and equally distributed.

If a great number of calves are feeding, as 30 or 40, or more, it might be so contrived in such pens, by pipes communicating with the troughs, that one person might give the whole calves their milk at the same instant of time; and that any given quantity of milk, and no more, can go into each trough; but as this method would probably be but rarely required by the farmer, it is unnecessary, in a general point of view, to enter into an explanation of it.

SECTION VII.

Dairies.

The profits arising from a well managed dairy, are, in general, so great, and in the opinion of many, so much superior to what can be obtained by any other method of husbandry, that no farm should be without the necessary accommodations for carrying on that business to a certain extent, according to the nature and size of the farm.

By negligence and inattention in the construction of those accommodations, as well as in the management of the milk, the farmer's, or dairyman's profits, are often much diminished, and the quality of his butter and cheese rendered so bad, that it becomes hardly saleable; for on the construction of the dairy, and the order in which it is kept, the quality of these in a great measure depends.

There is nothing so attractive, or so tenacious of whatever affects the scent of the ambient air, as milk or cream, and particularly so, of the taste or smell of the vessels in which they are put: even the state and the temperature of the atmosphere, have the most visible influence on milk, as is evident from the effect produced by thunder, and the different sorts of management requisite in making butter or cheese, according to the warmth or coldness of the air.

With respect to the dairy-house and utensils, the utmost care and attention to cleanliness are indispensably requisite, otherwise, it is in vain to attempt making either good butter or good cheese. The smallest speck of filth, or even of sour milk, left about the utensils, will most unquestionably give a bad taste to the butter or cheese; and milk spilt any where in the dairy, and allowed to grow sour before it is cleaned away, or any thing else producing a bad smell being permitted to remain within the dairy, will have the same effect, particularly on butter, and will at once infallibly shew the sluttishness of the dairymaid, or carelessness of those who superintend her. In short, the most perfect nicety and cleanliness are absolutely necessary throughout the whole progress of the milk, from the udder of the cow till it is made into butter or cheese; to obtain which, no pains or labour should be spared or thought too much.

Having premised these things, the easiest mode of accomplishing them is next to be pointed out, and this, in a great measure, will depend on the construction of the dairy.

There are three kinds of dairies, namely, a butter dairy, a cheese dairy, and a milk dairy. The names of the two first sufficiently point out the nature of each. The last is chiefly near great towns, where the milk is disposed of as it comes from the cow.

A well constructed butter dairy should consist of three apartments; a milk-house, a churning-house, with proper boiler, &c. for scalding and washing the implements, and a room for keeping them in, and for drying and airing them, when the weather will not permit it without doors.

A cheese dairy should also consist of three apartments; a milk-house, a scalding and pressing-house, and a salting-house. To these might be added a cheese-room or loft; but as this is generally separate from the dairy, it is not here included, although it might with great propriety be above the dairy.

A milk dairy requires only a good milk-house, and a room for scalding, cleaning, and airing the utensils.

Attention to the temperature of the air, being of so much importance in the making of butter or cheese, it naturally follows, that the dairy should be so situated and contrived, as not to be greatly affected by the heat of the sun in summer, nor by the coldness of the air in winter, although in winter it is, perhaps, easier to give it a proper degree of heat, than to keep it sufficiently cool in summer: for this reason, a northern exposure is the best, and this as much under the shade of trees or buildings as possible; for if it can be so situated that the sun can have no influence either on the roof or walls, so much the better.

If there is no apartment above the dairy, a thatch roof (which on no other account should be recommended) laid upon tile, being less liable to the influence of the sun than any other, might be the best; but, as it should always be endeavoured to have some apartment above the dairy, very well aired, in this case the nature of the covering is of the less consequence.

Stone walls are to be preferred to brick, being, when of a proper thickness, neither so pervious to the heat in summer, nor to the cold in winter.

The state of the air being so necessary to attend to in the management of a dairy, it would be an object of great importance to ascertain the most proper temperature for carrying on the different operations therein to the best advantage; a matter by no means certain, even among the most experienced dairywomen. It is said that a dairy cannot be kept too cool in summer, and that in winter the aid of fire is generally necessary. A medium degree of heat or cold, it would therefore appear, is the best, which we shall suppose is between 40 and 50 degrees of Fahrenheit's thermometer; suppose 45. If this were correctly ascertained, a thermometer would be a most useful implement in a dairy, and it might be kept always at that degree, either by cooling the dairy in summer with spring water, or warming it in winter by stoves.

Some are of opinion, that the ceiling of the milk-house ought never to exceed seven feet in height from the floor, and that the upper part of the windows or lattices should be as high as the ceiling, and on opposite sides; by which the steam arising from the warm milk will be the more quickly carried off. Others again think the dairy cannot be too lofty, imagining it may then be the easier kept cool in summer.

For my own part, I can see no good reason for making it exceed eight feet in height; and whatever may be its height, the upper part of the windows should certainly be the same, as no warm air can then stagnate near the ceiling, which would be the case if it were loftier than the windows. These windows should all be latticed, and slight frames fitted thereto, with gauze stretched upon them, to give a free admission of the air when required, and to keep out flies and other insects.

The floor should be laid with the best freestone flags, made as smooth, and jointed as close as possible. Square paving bricks, properly jointed, may do when flags cannot easily be got; but the best floor of all, where it can be obtained or afforded, is marble, or the beautiful black slate got upon Lord Penrhyn's estate in North Wales. In either case, the floor should have a gentle declivity towards the middle, or the most convenient place for carrying off the water with which it is washed and flooded in hot weather.

Around the walls should be shelves (if the dairy is on a small scale) neatly fixed, to hold the milk vessels. If the dairy be large, cisterns or coolers should be fixed (instead of shelves) to hold each of them about a meal of milk, never allowing it to exceed three inches in depth. These coolers may be lined with lead, from which there need be no apprehension, if kept perfectly clean. Marble would make excellent coolers, as I should suppose would likewise Lord Penrhyn's slate, before alluded to, which rises to any thickness, and takes a polish almost equal to marble.* In the bottom of the coolers should be a spigot, or plug, and a cock for letting out the milk, or the water when washing them. There should also be a water cock at the back of each cooler for letting in water to wash them; likewise a larger cock in any most convenient part of the dairy, for throwing water on the floor to clean it, or to cool it in the summer. Where there is a sufficiency of water, there might even be a small fountain, or *jet d'eau*, made to play in the middle of the floor; which by throwing up the water would tend greatly to keep the air cool and wholesome in warm weather.

In order to give the dairy a proper degree of warmth in the winter, a flue might be conducted from either of the fires in the churning-room, or place for drying and airing the utensils; which flue should be so contrived, that its communication with the dairy may be stopped when required.

The walls and ceiling should be plastered very smooth, and no cracks allowed to be in them, which might harbour dust or spiders; neither of which ought ever to be permitted in a milk-house, or any part of a dairy. That part of the walls from the coolers or shelves to the ceiling, is sometimes finished with small glazed Dutch tiles, which have a very neat and clean effect. Sometimes there are only four or five courses of these tiles, being about 18 or 20 inches above the coolers. Even this has a very good effect, especially if the upper tile is finished with a neat border, as some of these sort of tiles often have.

The churning-room should be contiguous to the milk-house, and should be provided with a fire-place and furnace, with a proper boiler for heating water to scald the dairy utensils; also for the purpose of warming the air in cold weather, when it is necessary to bring it to a certain temperature, for the more advantageously making the butter. A pump, with spouts for filling the copper, is also very convenient, and a cock below to empty it.

The room for holding the utensils should also have a small fire-place, for airing and drying them properly, when the weather will not permit it to be done without doors; but when they can be dried in the sun, it is always the best way; and there should be proper stone shelves without for that purpose. This room also serves in cold weather for the cream to stand in near the fire, to air it a little before it is put in the churn, which is found to be a great advantage to it. The greatest care must be taken to prevent either of these places from smoking, for there is nothing more apt to communicate a disagreeable flavour to milk or cream, than smoke; or allowing the utensils to remain where there is smoke.

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* In Leicestershire they find that common slate of flag answers the purpose perfectly well.

These two latter rooms are sometimes made to serve for other purposes, particularly at the dairy of the ingenious Mr. Wakefield, near Liverpool, who, by having an additional copper in the churning-house, uses it occasionally as a brew-house: and the latter room, by having a proper table in it, is sometimes used as a laundry. Over these places there may be beds for the dairymaids, or the other servants.

The milk-house of a cheese dairy, ought to be constructed nearly on the same plan as that already described; for even in this it is not always that the whole milk and cream are made into cheese, in which case the coolers, as already described, will be useful; but where the whole is generally made into cheese, it will, perhaps, be more convenient to have shelves for putting the milk utensils upon, as those utensils will be convenient for carrying the milk to the cheese-tub, or to the copper when necessary to warm it.

The pressing, or scalding-house may be on the same construction as the churning-house already described, which will make it answer either purpose; only, if for making cheese, there should be a proper cheese-press within it; which is much more convenient than having it without doors, as is often the case. The salting-house, as used in Cheshire, should be well aired, and kept very clean. It should be laid with flags, having a gentle declivity to carry off the water when the floor is washed; and a stout shelf or table will be necessary, for laying and turning the cheese upon till fit for being taken to the cheese-loft. In or about the salting-house there ought always to be a quantity of small sand kept ready for scouring the utensils, shelves, &c.

The cheese-loft, or cheese-room, as it is often called, may be over the dairy, although it is generally made above the cow-house, and sometimes over the kitchen, the warmth of either being thought greatly to forward the ripening of the cheese. The floor is covered as equally as possible with meadow hay, for the knots in straw are said to make impressions on the cheese, which very much disfigure their appearance. In the cheese-lofts of Mr. Sutton, near Northwitch, in Cheshire, (who had then 54 cows) I saw near 400 cheeses, all lying in the highest order, each cheese weighing about 140 pounds weight, one of which he makes every morning.

As there are no milk dairies, excepting near large towns, and as these (when the whole milk is sold from the cow) will require but few dairy accommodations, it is unnecessary to give any particular directions for the construction of them. If they should happen to partake partly of the one sort and partly of the other, which is frequently the case, the directions already given, and the observations made on butter and cheese dairies, will, it is presumed, be sufficient to explain the accommodations necessary. At the same time, though it is pointed out what are the most useful conveniences about a dairy conducted on a large scale, yet in common farms, or in small dairies, some of those conveniences may be omitted, although the general principles here laid down ought invariably to be attended to.

The following is a description of Mr. Wakefield's dairy near Liverpool. Plate XVIII. fig. 1. is the plan; A the milk-house; *aaa* the coolers; *b* a slab for laying on butter after it is made up; *ccc* cocks for drawing off the milk from the coolers, one being made to serve two coolers, by a short piece of leaden pipe from the holes *ooo*, which are stopped by a plug *p*, being made sufficiently long to extend above the surface of the milk; *d* a large cock to throw water on the floor, which slopes a little from that part; *eee* are also cocks at the back part of the coolers, for letting in water; *f* is a door, latticed as in fig. 2.; *g* is another door most commonly used, but pannelled. B is the churning-room; *h* a fire-place; *k* a boiler; *l* a large copper, used when brewing. C room for drying or airing the utensils, also used occasionally as a laundry. Over these are apartments for the servants. Fig. 3. is a view of the inside of the dairy at the end Q.

Mr. Wakefield's horse machine for churning, shall be explained in the chapter on implements, where the various sorts of utensils used in the dairy, and a great variety of churns, and different modes of churning, will be pointed out.

SECTION VIII.

Sheds, Straw and Root-houses, Poultry-houses, and Hogsties, &c.

Besides the buildings already mentioned, there are several other conveniences necessary about a farm, the construction of which is so simple, and depends so much

Dairy. *Page 36.*

Fig. 1

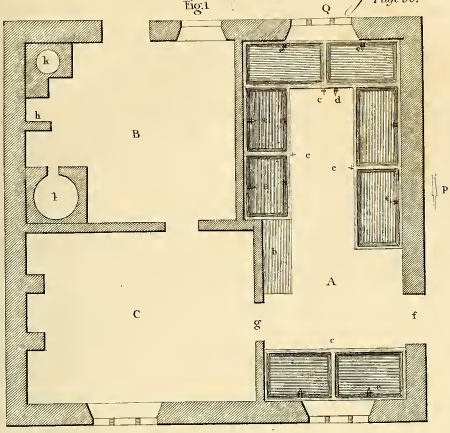


Fig: 2

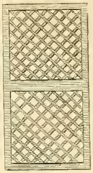


Fig: 3

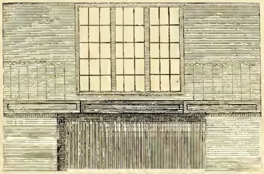


Fig: 4

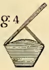
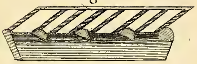


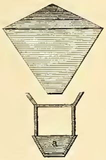
Fig: 5



Swine Troughs, *Page 40.*

Fig: 6

Fig: 7



Steam Boiler *Page 44.*

Fig: 8

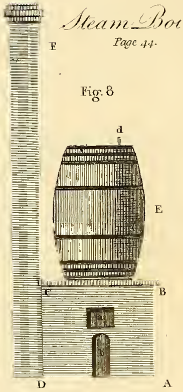
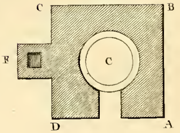


Fig: 9



R. Beatson delin.

Neele sculp. 352 Strand.

upon the construction of the other buildings that it is unnecessary to enter into a particular description of them; we shall therefore only submit the few following general observations, and leave the plans of those buildings till we come to the general arrangement.

Sheds.—What is generally understood by a shed, is when a roof, consisting of only one side or slope, leans or rests upon another building or wall to support the upper part of it; the easing or lower part being supported either by stone or wooden pillars. The same name is also sometimes given to a whole roof resting upon pillars. Sheds are of various uses, as for keeping secure from the weather all sorts of the larger implements of husbandry, for the protection of horses, cattle, or sheep, when allowed to go loose in the farm yard, for keeping meadow or clover hay, and for various other occasional uses; for which reasons they are extremely necessary in all farm yards.

Straw-houses.—A straw-house is also sometimes allowed in the arrangement of farm offices, but as straw may be built sufficiently secure in stacks, a house for storing it in, will not be found of much utility (unless for holding a small quantity occasionally), especially if the farmer has good tarpawlings, or painted cloths, as formerly recommended when treating of barns, which he can always lay upon the stack till quite completed.

Root-houses—Are perhaps more essential, particularly where many cattle or cows are kept. They are chiefly used for piling of cabbages and winter roots, which is very necessary, not only in case of a heavy fall of snow, or a severe frost coming suddenly on, but that they may be the more at hand when wanted. Potatoes being more liable to injury by frost than almost any other root, should be kept as well secured therefrom as possible. In Lancashire, Cheshire, and several other places, potatoes are generally piled in the field, and covered over with earth formed into a ridge, like the roof of a house, and well beat down, in such a manner that the rain runs off to a drain which is cast all round the heap. The manner of doing it is as follows: the space intended for the potatoes to lie upon is covered with straw, they are then laid on the straw in an oblong form to the breadth intended, and piled up as high as they will lie; then they are covered with straw, which is drawn even like thatch, and laid so as to meet it in an angle at top. A trench is then cast all round, the earth from which is laid over the straw of a sufficient thickness to keep out frost, being well beat down with the back of a spade; there is generally about six inches thickness of straw, and as much of earth. The only risk from heavy rains in this method is, that it enters at the ridge. If instead of making the ends of the straw meet on the ridge, the middle were laid on there, and so bent down, it might prevent any rain entering, which it is presumed but seldom happens when proper pains are taken.

Poultry-houses.—Poultry if rightly managed might be a source of great profit to the farmer; but where many are kept they ought not to be allowed to go at large, in which case little profit can be expected, for not only many of their eggs will be lost, and many of themselves perhaps destroyed by vermin, but at certain seasons they do a great deal of mischief, both in the barn yard and in the field. No doubt they pick up some grain at the barn doors that might otherwise be lost, but if the straw is properly thrashed and shook, there would be very little of this. In the common careless way of thrashing, a great deal of corn is undoubtedly thrown out among the straw; but when we consider the dung of the fowls, and their feathers that get among it, and the injury these may do to the cattle, this is no object. It is much better to allow the poultry a certain quantity of corn and other food, and to let the cattle have the benefit of what corn may be among the straw.

Poultry ought therefore always to be confined, but not in a close, dark, diminutive hovel, as is often the case; they should have a spacious airy place, properly constructed for them. Some people are of opinion, that each sort of poultry should be kept by itself. This, however, is not absolutely necessary, for all sorts may be kept promiscuously together, provided they have a place sufficiently large to accommodate them conveniently, and proper divisions and nests for each kind to retire to separately, which they will naturally do of themselves.

This method is practised with great success at Mr. Wakefield's, near Liverpool, who keeps a large stock of turkeys, geese, hens, and ducks, all in the same place: and although young turkeys are in general considered so difficult to bring up, he rears great numbers of them in this manner every season, with little or no trouble whatever.

He has about three quarters, or near a whole acre, inclosed with a fence only six or seven feet high, formed of slabs set on end, or any thinnings of fir or other trees split and put close together. They are fastened by a rail near the top and another near the bottom, and are pointed sharp, which I suppose prevents the poultry flying over, for they never attempt it although so low. Within this fence are places done up slightly (but well secured from wet) for each sort of poultry; also a pond or stream of water running through it. These poultry are fed almost entirely with potatoes boiled in steam, and thrive astonishingly well. The quantity of dung that is made in this poultry place is also an object worth attention; and when it is cleaned out, a thin paring of the surface is at the same time taken off, which makes a valuable compost.

The most magnificent poultry place perhaps that ever has been built, is at Lord Penrhyn's, at Winnington, in Cheshire: it consists of a handsome regular front, extending about 140 feet: at each extremity is a neat pavilion, with a large arched window. These pavilions are united to the centre of the design by a colonnade of small cast iron pillars painted white, which support a cornice and a slate roof, covering a paved walk and a variety of different conveniences for the poultry, for keeping eggs, corn, &c. The doors into these are all of lattice work, also painted white, and the framing green. In the middle of the front are four handsome stone columns, and four pilasters, supporting likewise a cornice and a slate roof, under which and between the columns is a beautiful mosaic iron gate; on one side of this gate is an elegant little parlour, beautifully papered and furnished; and at the other end of the colonnade a very neat kitchen, so excessively clean, and in such high order, that it is delightful to view it. This front is the diameter or chord of a large semicircular court behind, round which there is also a colonnade, and a great variety of conveniences for the poultry: this court is neatly paved, and a circular pond and pump in the middle of it. The whole fronts towards a rich little field or paddock, called the poultry paddock, in which the poultry have liberty to walk about between meals. It happened while I was there to be their dinner time, at one o'clock. At this hour a bell rings, and the beautiful gate in the centre is opened. The poultry being then mostly walking in the paddock, and knowing by the sound of the bell that their repast is ready for them, fly and run from all corners, and rush in at the gate, every one striving who can get the first share in the scramble. At that time there were about 600 poultry of different kinds in the place, and although so large a number, the semicircular court is kept so very neat and clean that not a speck of dung is to be seen. This poultry place is built of brick, excepting the pillars and cornices, and I believe the lintels and jambs of the doors and windows, but the bricks are not seen, being all covered with a remarkably fine kind of slate from his lordship's estate in Wales. These slates are closely jointed and fastened with screw nails, on small spars fixed to the brick; they are afterwards painted, and fine white sand thrown on while the paint is wet, which gives the whole an appearance of the most beautiful freestone.

Hogsties—Are of simple construction; they require only a warm dry place for the swine to lie in, with a small area before, and troughs to hold their food. They are generally made with shed-roofs, and seldom above six or seven feet wide.

Although swine are generally considered as the filthiest of all animals, yet there is no animal delights more in a clean comfortable place to lie down in, and none that cleanliness has a better effect upon with respect to their thriving and feeding. In order to keep them dry a sufficient slope must be given, not only to the inside where they lie, but to the outside area, with proper drains to carry off all moisture. The inside should also be a little elevated, and have a step up from the area of at least five or six inches. Hogsties should have several divisions, to keep the different sorts of swine separate, nor should a great many ever be allowed to go together; for it is thought they feed better in small numbers, and of equal size, than when many are put together of different sizes. Proper divisions must therefore be made, some for swine when with the boar; others for brood swine, and for them to farrow in, for weaning the pigs, for feeding, &c.

Swine are apt to spill and waste a great deal of their meat by getting their feet among it, unless proper precautions are taken to prevent them. This may be done by making a rail or covering of thin deal slope from the back part of the trough towards the fore part, as in fig. 4. leaving just room enough to admit their heads. There should also be divisions across the troughs, according to the number of swine, to prevent the strongest driving away the weakest. These divisions need not extend to the bottom of the troughs, but should rise a little higher than the top, and may be made of pieces of board about eight or ten inches broad, as represented in fig. 5 and 6.

Another way to prevent them wasting their food, would be to have shallow wooden troughs placed about a foot from the ground; above these, large deep troughs, open at bottom, and placed as shown in the section, fig. 7. In the upper trough the meat is put, but no more can get down than what rests on the bottom of the shallow trough, and when that is eat up, a fresh supply will always succeed from the upper trough. For food of a liquid nature, as milk, whey, &c. there may be a stone trough below, as at *a*, and spars or holes in the bottom of the shallow trough to let it pass through. Troughs of this kind may be made to serve two divisions at the same time, by being placed betwixt them.

A small stream of water running through a sty in an open spout, so that the pigs can easily get at it to drink, would be of great service.

Sties ought to be constructed that the swine may be easily fed, without going in among them. In some places it is so contrived that they may be fed through openings in the back kitchen wall, without even going out of doors. This is very convenient, where only a few swine are kept for family use, and makes it easy to give them the refuse of vegetables and other things from the kitchen, which, perhaps, would otherwise be thrown away.

Pigs' kitchen.—In some places, where many swine are kept, there is what is called the *pigs' kitchen*, which is nothing more than a furnace and copper placed in any convenient situation near the sty, for boiling their meat; but as it will be shewn afterwards how to boil potatoes, and other vegetables, in steam, it will then be easily understood how to construct a *pigs' kitchen* on this plan.

Coal-houses.—There are very few parts of the country so fortunately situated, but fuel becomes a very necessary article of care and attention; and no part where it is not an article of considerable expence. Every provident farmer will take care to lay in during the summer season, while roads are good, as much fuel as will serve him in the winter. It therefore becomes necessary to have a proper place to store it in, for it is too valuable an article to allow being exposed to every intruder.

Coal-houses, or coal-yards, are generally without any roof or covering; but it is much better they should be covered, as coal is materially injured by being exposed to the sun and the weather. And in those countries where great coal is burnt, it is best to keep the great and the small coal separate, and to have a place also for keeping cinders.

Wood or Peat houses.—Where coal is not generally burnt, or perhaps difficult to be got, it is necessary to have a good store of wood or peat. These should also be laid in during summer, and must be well secured from wet or damp. The great and the small, or brushwood, should be piled separate. The former to be cut in short billets, according to the length of the grates or fire-places they are to be burnt in. The latter should also be cut short, which will make it stow in less room; and will be a very proper job for the farmers' servants when they have nothing else more material to do.

Workshop.—In every extensive farm, a workshop is very convenient and necessary, not only for making and repairing all sorts of implements, but for keeping all the different parts of ploughs, carts, wheels, &c. blocked out, in order to be properly seasoned; for it is of the utmost consequence to the farmer to have all his implements made of well seasoned timber, which he never can be certain of getting unless he keeps it ready blocked out in his own possession. In this workshop should be a proper set of carpenters' tools, a bench for working on, and a lathe for turning naves of wheels; also a grindstone for sharping tools, &c.

Timber-yard.—Adjoining, or near the workshop, should be a timber-yard, with a sawpit. If sufficient room can conveniently be obtained, this might be at one end of the workshop, under the same roof. In this yard should be kept, not only all sorts of rough timber proper for making and repairing implements, but also all broken or old implements, old palings, and any other pieces of sound timber, which, however small and useless they may appear, will most probably be of some use at one time or another. Whatever is unsound and fit for no other use, should be put into the wood-house for fuel.

Tool-house, or Store-room.—A shed or house for keeping the larger implements, has already been mentioned. There are several other sorts of implements, or tools, of a smaller size, necessary about a farm, which ought to be taken care of, especially as many of them are but seldom used, and therefore are apt to be stolen or lost, unless carefully laid by; such as spades, shovels, forks, rakes, scythes, reaping-hooks, riddles, sieves, hoes, wedges, quarry tools, &c.; to which may be added sacks, ropes, twine, and even old iron and old nails. A small, dry, well aired place for keeping all these sorts of things, is very convenient; and of such a place the farmer himself ought always to keep the key, otherwise he may often be at a loss to get things he thought himself sure of finding.

Meal-house, or Meal-room.—Many farmers, when they cannot get so good a price for their corn as they expect, or when there is a prospect of meal rising in price, grind their corn, particulary oats, in the northern parts of the kingdom, and keep the meal till they get a good price for it. This very frequently, indeed generally, turns to good account; for it mostly happens, that meal rises considerably, before harvest, that the new crop comes in. At all events, it is the most profitable method for a farmer to turn his corn into meal as soon as possible, provided he has a proper place for storing it up. Many substantial reasons might be adduced for this practice; but a statement of these more properly belongs to a treatise on agriculture, than on farm buildings. It would be superfluous to enforce how necessary it is to have a meal-house, as dry and well aired as possible. It is equally necessary to have it perfectly secure from vermin; for there is nothing that rats and mice will so eagerly strive and persevere to come at, as meal. An upper floor is, therefore, the best situation for a meal-room, or in a dry place on a ground floor, provided proper and well jointed strong meal-chests, or *girnels* (as they are sometimes called) are set there for holding the meal. Whether kept in chests or in cells, the meal should be hard pressed to make it keep well; which may be done by a small iron roller, or ramming beetle, or by treading upon it with the feet. This last is the most common, although not the most cleanly way.

Servants' room.—In large farms, where many servants are kept, especially single men, it is necessary to have a proper place for them to sleep in; and, if they provide their own victuals, a place to dress them in. It is extremely hazardous to allow servants to have the management of fires in any out building contiguous to farm offices, unless the utmost precaution is taken to prevent an accident; as the slightest negligence in that respect, may, in a very short time, occasion the most dreadful devastation. For this reason, it is best to have the servants' room so situated, that if any accident from fire were to happen, no injury could be done to the offices. A neat simple cottage, at a little distance, might be the safest way.

To guard against any such accident as much as possible, the floors should be of stone, of brick, or of plaster, as in several parts of England, which makes an exceeding cheap and safe floor for an upper apartment, or even for a loft of any kind.

Plaster floors.—In Nottinghamshire, these plaster floors are much used: and at the Earl of Winchelsea's, in Rutlandshire, the upper floors of his farm houses are also of plaster. But as these floors are, in general, so little known, it may be of some utility to give a short account of the manner of constructing them.

The joists are laid as usual; then a sort of reed, found chiefly in Huntingdonshire, is nailed on, and the plaster laid upon these reeds; but, to save plaster, there is sometimes laid on first, a thin coat of common lime to fill up the inequalities. The plaster is then spread upon this, about two inches thick, and should be laid on as quickly as possible. This plaster is sold at the kiln for 6*d*. per bushel. The expence of laying it on, if burnt and prepared, is 5*d*. per square yard. If to be burnt and prepared by the workman, about as much more. These make excellent cheap floors, and are very proper for farm houses or cottages. Where reeds cannot be got, laths may do, but they are much dearer. The cultivation of those reeds ought, therefore, to be most particularly encouraged, for they are not only an excellent material for floors, but for covering roofs.

The sleeping place for the servants, may be made to accommodate several men in a small compass, by having fixed beds placed in double tiers, that is, one over another; by which method four beds will take up no more room than two in the common way. The access to the upper beds may be rendered sufficiently easy by means of steps; and the entrance to them may be made either on the same side with the lower beds, or on the other side, as is most convenient.

Steam boilers.—To a farmer who keeps many horses or cattle, or even swine or poultry, the practice of boiling their food in steam, is so great a saving, and an advantage, that it deserves the most particular attention. At present, however, it is confined to such narrow bounds, that it is known but to very few. The following short description of it will therefore, I hope, be acceptable, and tend to make it more generally known.

The principal food that is boiled in this manner, is that inestimable root the potatoe; the cultivation of which, as now so warmly recommended by the Board of Agriculture, cannot be too generally adopted; for, as a ready and wholesome food to man and beast, nothing excels it; and, what is peculiarly fortunate, it is universally palatable from the palace to the pig-sty.

Potatoes have often been given raw to horses and cattle, but they are found to be infinitely preferable when boiled in steam,* which renders them much drier, and more nutritive, than when boiled in water.

The manner of doing this is simple and easy, and is as follows. ABCD, fig. 8. and 9. is of stone or brick, built in a cubical form, about three feet every way: *a* is the door of a furnace; *b* the ash-pit; *c* is a shallow iron kettle, about 20 inches in diameter, and seven or eight inches deep, placed over the furnace. BC is a flat smooth stone, covering the whole top of the building; in the middle of which, a round hole is cut out to admit the iron kettle being fitted closely in. E is a cask, the bottom of which is perforated with a number of auger holes, and is placed over the steam kettle, which is about half filled with water. The cask is then filled with potatoes, and being closely clayed all round the bottom, to prevent the steam escaping between it and the stone, the cover is put on, also very close: *d* is a short thick plug, put slightly in a hole in the cover, to give air; or this hole may be covered with a piece of lead fitted closely upon it, and moveable on a leather hinge, that it may of itself give way, to prevent the cask being endangered by the steam. F is the flue or vent, which may be built to the wall of any house, or any other most convenient place.

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* To ascertain this, Mr. Wakefield fed some of his horses on steamed, and some on raw potatoes, and he soon found the horses on the steamed potatoes had greatly the advantage in every respect. Those on the steamed potatoes looked perfectly smooth and sleek, while the others were quite rough.

When the potatoes are boiled sufficiently, which may be known by taking off the cover, they are either taken out with the shovel, or else the cask is turned over and emptied into a barrow or tub, and again filled, if necessary.

This is the simplest construction of a steam boiler, but is sufficient to explain the nature of it.

Mr. Wakefield, and Mr. Eccleston, of Scarsbrick hall, use them of this kind, and always give their horses steamed potatoes instead of corn. The former also feeds his poultry, as already mentioned, in this manner; and it is surprising to see in what fine order his horses and poultry are, although they never taste corn.

Steam boilers may be of various other constructions, according to the extent required; and one steam kettle may be made to boil several casks at the same time. Or, instead of casks, there might be fixed boilers, with sliding bottoms, for emptying the potatoes into little waggons, or barrows wheeled in below them. The potatoes might also be taken out of a fixed boiler, by means of an iron basket, made to fit the inside of the boiler; which basket might easily be taken out with a lever, or a small crane.

If the steam boilers are placed near the kitchen, they may be used occasionally for boiling any thing for family use; this method of boiling being found much preferable to boiling in water for most culinary purposes.

Brew-house, bake-house, &c.—Besides the accommodations and conveniences already described, there are several others sometimes built upon a farm, such as brew-house, bake-house, slaughter-house, pigeon-house, apiary, wash-house, laundry, kilns, and stoves for drying grain, cisterns for holding water, wells, pumps, &c.; all which, as also different kinds of steam boilers, are particularly described, and the manner of constructing them pointed out in another work.*

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* Practical Treatise on Rur. Imp.

SECTION IX.

Situation and Arrangement of Farm Buildings.

HAVING now got through a description, individually, of all the different sorts of accommodations generally given to a farm; it now remains to show how to arrange them together in the most commodious way. The first thing, however, to be considered, is the choice of situation.

In ancient history we are told, that the Romans were so very attentive and careful in the choice of a good and healthy situation, that they would not even encamp upon a spot of ground, till they tried various experiments to ascertain if it was sufficiently healthy. How much more necessary then, is it to ascertain the salubrity of a place destined for more permanent purposes.

In general, where a choice of situation can be had, these four things should be particularly attended to: a pure and temperate air; the water wholesome, and easily come at; the soil dry, and the place centrical, and of easy access.

No buildings whatever require these qualifications more than farm buildings; yet, in general, it would appear they had been totally disregarded. How often do we see farm buildings and barn yards placed in the very worst situation in a whole farm: in low, marshy, boggy spots, almost inaccessible to man or beast, and fit only for a resort to frogs and wild ducks. Perhaps too, within a little distance, a fine, dry, wholesome situation might have been obtained; for there are few farms of any considerable extent, in which a tolerable good situation for building may not be found somewhere.

If dryness and purity in the air are so desirable and requisite for the site of a dwelling-house, how much more (if possible) are they necessary for farm offices and barn yards. If these are placed in a damp and humid spot, the farmer's whole crop runs the risk of being rendered useless and unsaleable, however dry and well conditioned he may have brought it from the field; for if the place to which he brings it is damp and unwholesome, his grain will soon acquire a softness, and perhaps mustiness, very injurious to its value. On the other hand, if the situation is dry, his grain will not only improve and keep in better order, but in general it will be of a better quality, and consequently worth a better price.

It would be deviating from the plan of these general observations, to enter into a particular detail of the various ways of trying the quality of the air, of the water, and of the soil, which are fully explained in the work so often referred to; as also methods of purifying water, making artificial springs, &c.; we shall, therefore, now proceed to offer a few general rules for the arrangement of farm offices.

In fixing the arrangement of a new set of farm buildings, the first thing to be taken into consideration, after choosing the situation, is the nature and produce of the farm. From these may be judged the different kinds of accommodation that will be necessary. For example, every farm must have 1. A dwelling-house: 2. A barn suitable to the extent of arable land in the farm, either with or without a thrashing mill, but always with one, if possible; and it should be endeavoured to place it so that it may go by water, if a supply can be had. 3. Stables, the dimensions of which must be determined according to the number of horses necessary for the farm. 4. Cow-houses, or feeding-houses, or both, according to the number of cows and cattle; and so on, till the whole accommodations necessary, and their dimensions, are fixed upon.

Having ascertained these, and the situation for building on being also settled, the ground must be carefully and attentively viewed; and if not very even, the different levels must be observed, and the best way of conducting all the necessary drains, and carrying off all superfluous moisture. Also the best situation for dung and urine pits, or reservoirs, which will in a great degree ascertain at once where the cattle-houses and stables should be. These being fixed on, the barn should be as near them as possible, for the convenience of carrying straw to the cattle; and the barn yard should be contiguous to the barn. If a granary is resolved on, that should also be near the barn, or over it; as likewise the straw-house, which should be close to the barn.

These main points being determined on, the others will easily be found; always observing this rule, to consider what is the nature of the work to be done about each office; and then the easiest and least laborious way to perform that work, so far as it is connected with other offices. In case this should not be sufficiently explicit, I shall suppose, by way of illustration, the situation of a feeding-house is to be considered of. The nature of the work to be performed here, is bringing food and litter to the cattle, and taking away their dung. The place from whence the greatest part, perhaps, of their food, and all their litter come, is the barn; therefore the feeding-house should be as near the barn as possible.

If turnips, or other roots, or cabbages, make a part of their food, the most commodious way of giving these must be determined on; whether by having a root-house adjoining the cattle-house, and that filled occasionally, or by having a place to lay them down in, near the heads of the stall, from whence they are thrown in at holes in the wall, left for that purpose.

The easiest method of clearing away the dung must also be considered, according to the different plans mentioned when describing cow-houses, &c.; and the same general rule being observed in determining on the site of all the other offices or accommodations, together with a careful examination of the ground to be occupied (upon which the arrangement of the offices in a great measure should depend); any person conversant in rural affairs, who attends to these particulars, and can lay down his ideas in a drawing, may easily direct the planning and building of a very commodious set of offices.

With respect to the site of the dwelling-house, a few observations have already been made thereon, when treating on that subject, in the first section. In addition to these, I shall now only remark, that although a house, being situated in the middle of a regular front, is, in some points of view, the most pleasing way, and in many situations, perhaps, the best, yet, unless the ground, and other circumstances, in every respect favour such a disposition, I would not invariably adhere to it; for it may often happen, that a much better situation for the dwelling-house may be obtained at a little distance from the offices, and a pleasing enough uniformity be observed in them at the same time.

CONCLUSION.

If any thing contained in the foregoing observations, and the designs which accompany them, shall tend to promote the interests and convenience of that useful and valuable class of people, the practical farmers; or, if they shall meet the approbation of that honourable and truly patriotic Board, for whose consideration they are intended, it will to me afford the most sincere satisfaction: and should my services or assistance, be at any time deemed worthy of future acceptance, I shall be proud to obey their commands, and to afford every aid in my power, to promote the views of so highly beneficial an establishment.—An establishment, for which posterity will ever revere the memory of that illustrious Monarch, under whose benign patronage it was formed, and in whose auspicious reign, it will for ever stand as an æra worthy to be recorded, among the greatest of those important events by which it has been distinguished.

Plate 1

Small Farm House, First Class.

Vide Page 49.

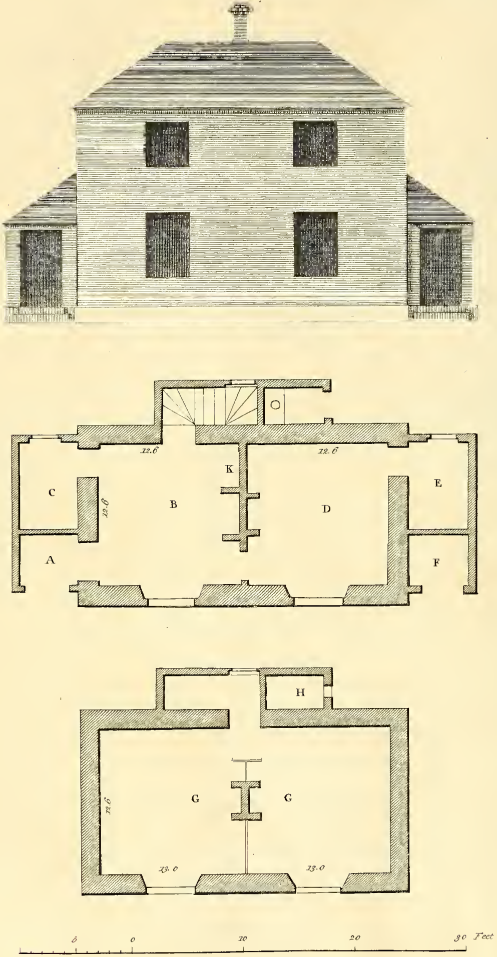

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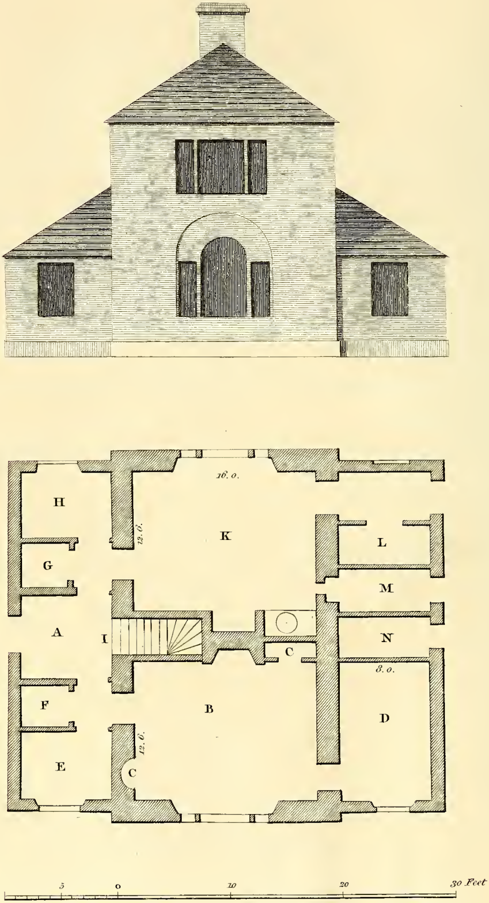
Plate II.

Farm House, Second Class.

Vide Page 49.



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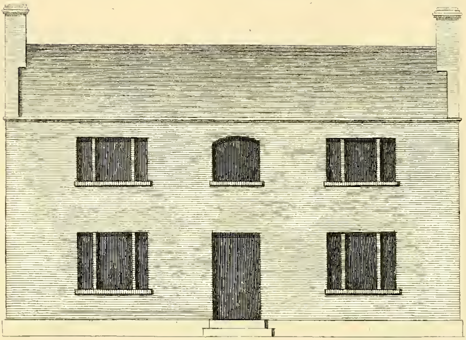
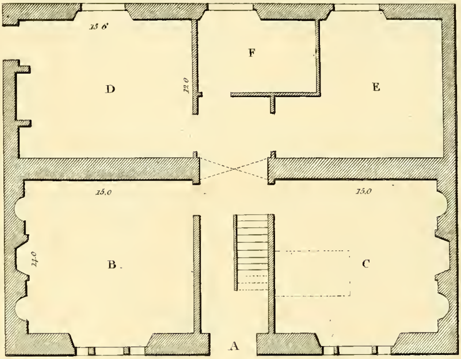
Farm House, Third Claſs.

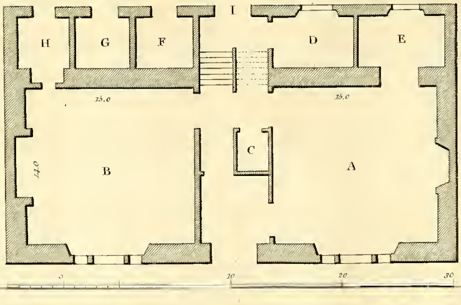
Vide Page 49.



Ground Plan N.^o 1



Ground Plan N.^o 2



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FARM BUILDINGS.

EXPLANATION OF THE PLATES.

PLATE I. Contains an elevation and plan of a small farm house, calculated for a farmer who lives with his servants.

It may be divided as follows :

A is the entry. B the kitchen, having an oven at K if required. C a small apartment off the kitchen, in which may be a bed, or it may serve for a store-room, &c. D the farmer's private room or parlour. E dairy.* F hen-house, or for keeping small implements, as spades, shovels, rakes, &c. GG chamber-floor, containing two bed-rooms. H pigeon-house over the necessary. The dimensions are marked on this and the following plans, but may be varied at pleasure, according to circumstances.

Plate II. Design for a farm house, which if properly executed, would have a very pretty and uncommon effect, especially if built on an eminence, and having a neat garden in front. This house is supposed to be also for a small farm, but larger than the preceding, and for a farmer and his family rather in a better style. It may be divided in the following manner.

A the principal entrance, and lobby. B Parlour. CC closets. D store-room for meal, cheese, &c. E lumber-room, and small implements. F beer cellar. G Pantry. H dairy. I staircase. K kitchen, with an oven under the stairs, and a boiler on the other side of the fire-place. L coals or wood, and back entry. M pig sty, with a small opening towards the kitchen for throwing in dish water, offals, &c. N poultry.

Plate III. Elevation and two ground plans of a farm house, upon a larger scale than either of the two former. Plan No. 1. is divided as follows : A principal entry. B parlour. C family bed-room. D kitchen. E dairy. F pantry and cellar. The three latter are attached to the back part of the house by a continuation downwards of the same roof. By making their ceilings only seven and a half or eight feet high, some small bed-rooms may be got above them, having a few steps down from the floor of the front rooms, or a few steps up from the first landing place. At Burleigh, a seat of the Earl of Winchelsea, is a very good farm house, built nearly upon this plan. The back door of the kitchen enters into a brew-house and wash-house, the fire place and copper being behind the kitchen vent. Beyond this brew-house is a place for holding firewood, &c. in the back wall of which are openings to feed the swine at. In the kitchen is an oven, and below the grate is a very good contrivance for baking occasionally, but principally used for keeping the servants' meat warm. It consists of a cast iron plate and door like an oven. The chamber floor is divided into two rooms forwards and two small ones backwards.

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* Or the dairy may be at C if thought preferable.

Plan No. 2. is another manner of dividing the ground plan. A the parlour. B the kitchen. C closet. D dairy. E pantry. F coal-house. G poultry-house. H Pig sty, having an opening to the kitchen. I Back entry. The chamber floor may be divided into two very good bed-rooms, and a light closet to hold a bed also if necessary.

Plate IV. Is a farm house which may be made suitable to a farm of any, and may be divided according to either of the two following plans.

Plan No. 1. A front entry. B best parlour. C common parlour. D lobby and stairs. E kitchen. F pantry. G dairy. H cellar. I back entry.

Plan No. 2. A front entry. B parlour. C kitchen. D back entry under the stair. E brew-house. F cellar. G pantry. H dairy. I door of brew-house and back entry.

The accommodations in the back part of this house are supposed to be obtained in the same manner as in plan No. 1. of the preceding plate, and also the bed-rooms on the chamber floor.

This mode of enlarging a house saves a considerable deal of expence, and does not require so high nor so weighty a roof, as if the back walls were carried up to the same height as the other walls.

A variety of different elevations might be given, to suit the same plans, and many different plans, to suit the same elevations. Several other conveniences might also have been given, but where these are omitted it is supposed they are detached from the house, consequently could not be here included.

It is, however, presumed these four examples will afford sufficient *data* for the construction of farm houses suitable to farms of any description.

Plate V. fig. 1. is an oblong rick, showing the manner of laying the sheaves.

Fig. 2. Is an elevation, and fig. 3. a plan, of a small barn, according to the common construction used in most parts of England for the smallest farms. *abcd* is the thrashing floor. *ab* is a cross wall about three feet high, sometimes built to keep the thrashed corn from mixing with the unthrashed. *e* is a place for putting the thrashed corn out of the way till the whole is thrashed, or time had to clean it and put it elsewhere. This place is also about three feet high, and covered over with boards, but open on the side next the thrashing floor.

Plate VI. Is an elevation and plan of a barn, with two thrashing floors A and B. There is sometimes a cross wall built at the dotted line C. Barns of this kind are often erected of a large size and at a great expence, and yet have seldom any sort of conveniences whatever for storing the corn after it is thrashed, or for any other purpose except piling it up in the straw.

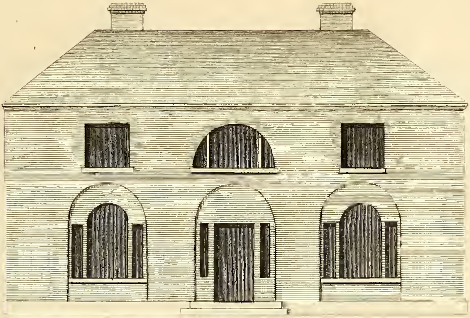
Plate VII. An elevation and plan of a barn at Muncaster, a seat of Lord Muncaster's. The dimensions are perhaps not precisely as his lordship's, for some of them were not measured, but the design is similar thereto. A is the thrashing floor. B place for laying the thrashed corn. C stairs up to a small granary, under which is a place for keeping potatoes, &c. At the other end of the barn is also a division D, which may be appropriated to different uses, as keeping implements, rearing calves, &c.

Plate VIII. A large barn belonging to Mr. Baillie of Hope, near Manchester. A thrashing floor. BB are cow-houses, containing eleven stalls on each side. CC calf-pens, the floors sparred. D one double stall and two single ones for four cows; and at E are two stalls. F is a

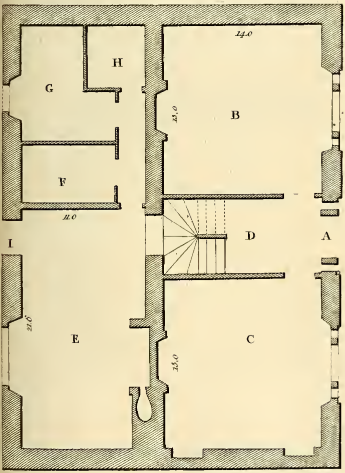
Plate IV.

Farm House, Fourth Class.

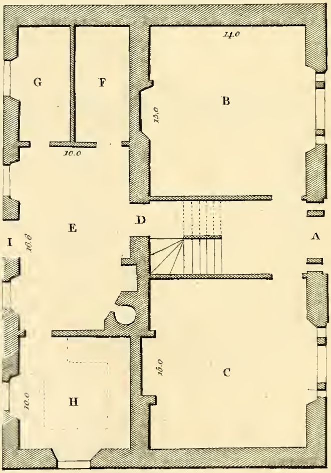
Vide Page 50.

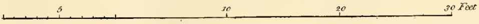


Ground Plan No. 1



Ground Plan No. 2





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Small English Barn.

Vide Page 50.

Fig: 2

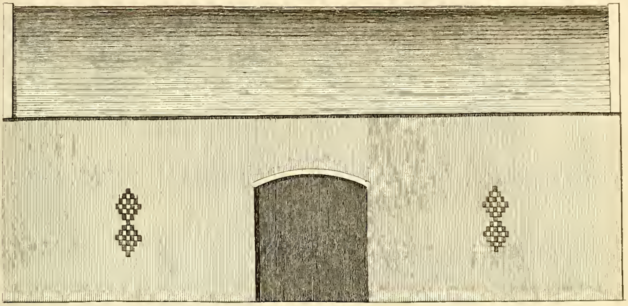
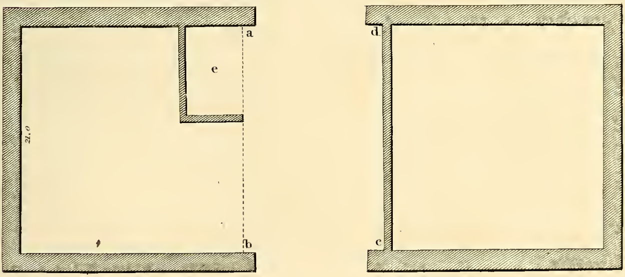


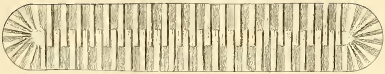
Fig:3



Oblong Rick.

Fig: 1

Page 10.



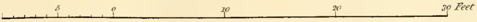


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Plate VI.

English Barn, with two thrashing floors.

Vide Page 50.

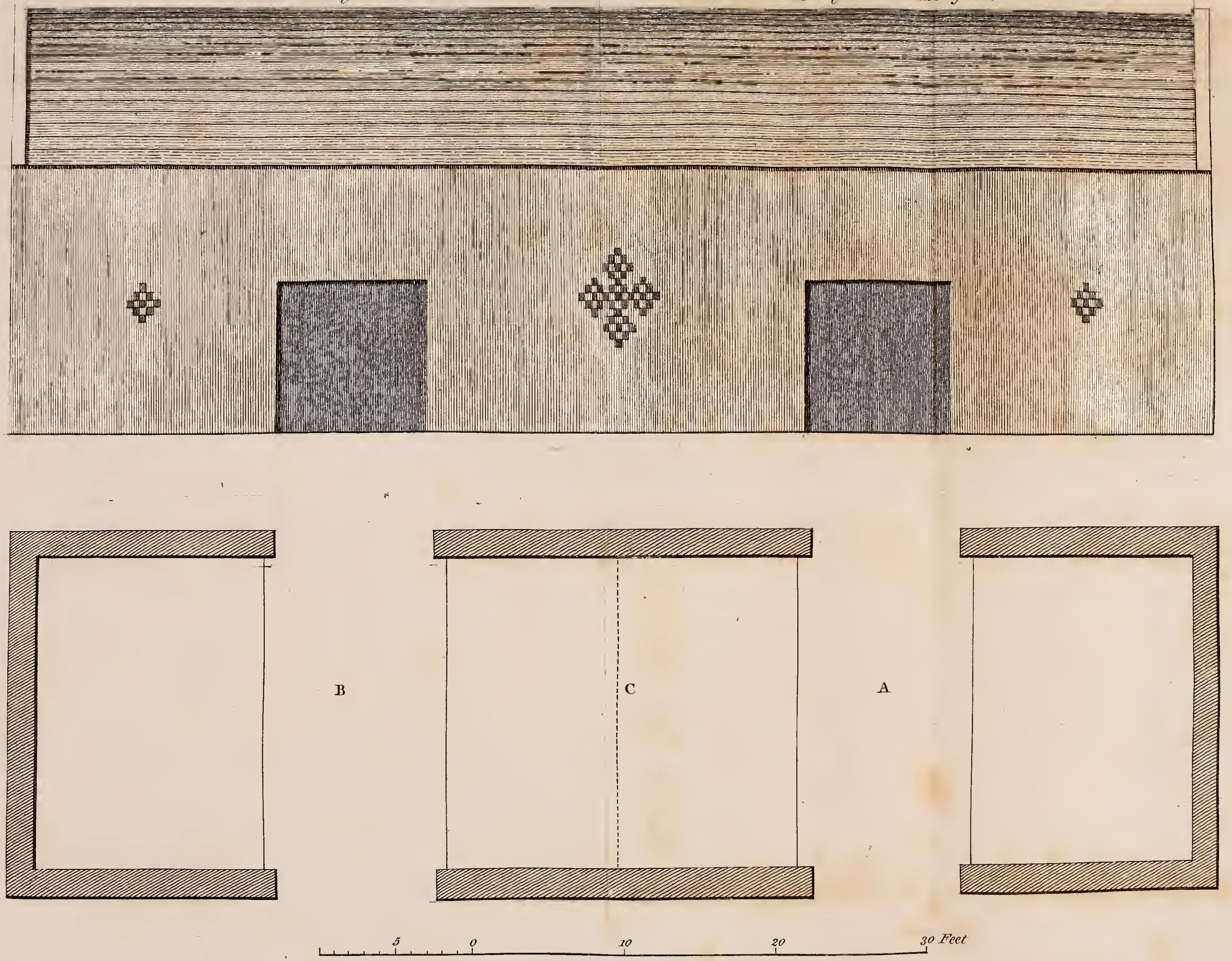

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Plate VII

Barn at Lord Muncaster's in Cumberland.

Vide Page 50.

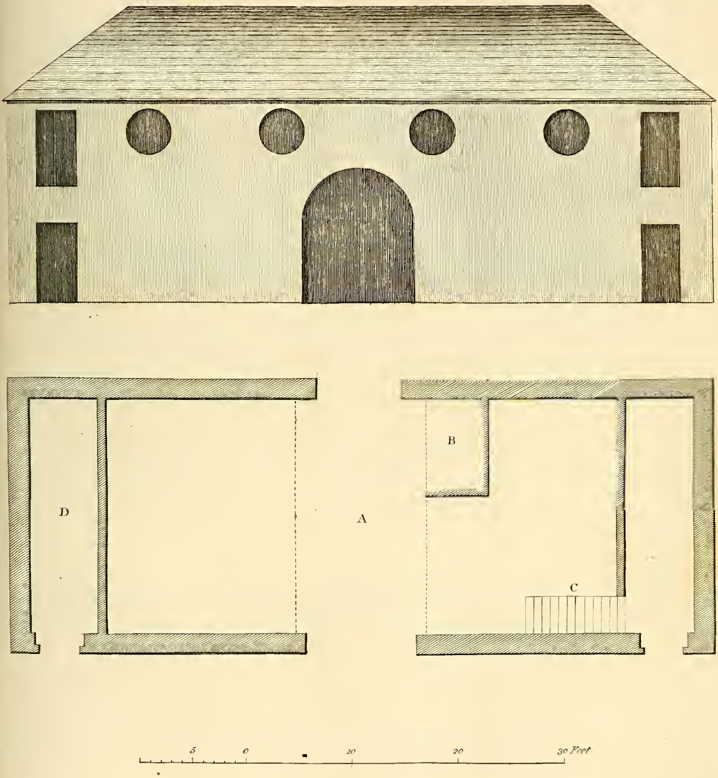

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Plate VIII.

Large Barn at Mr. Bayley's of Hope near Manchester.

Vide Pages 50 & 51.

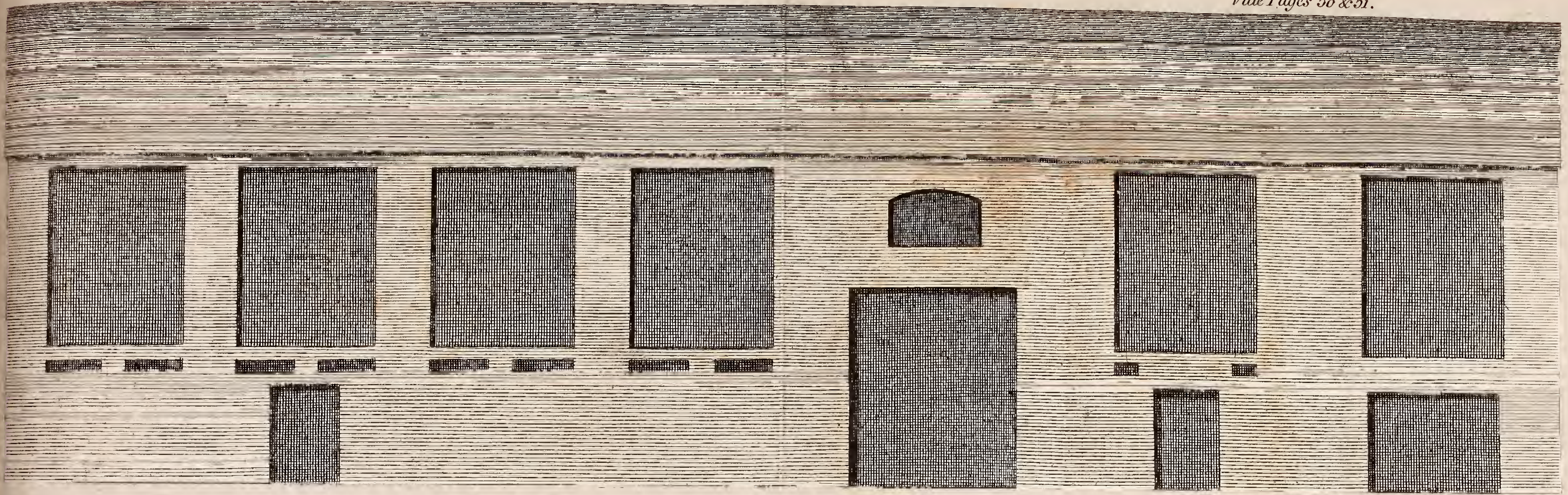

Fig. 2

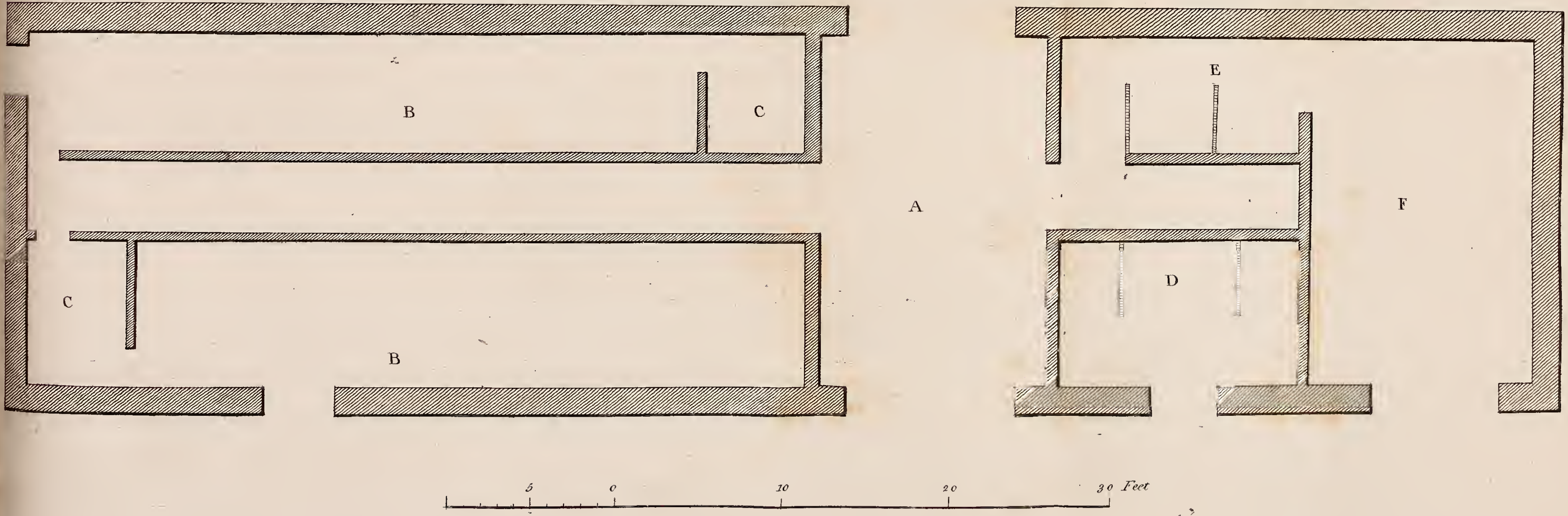

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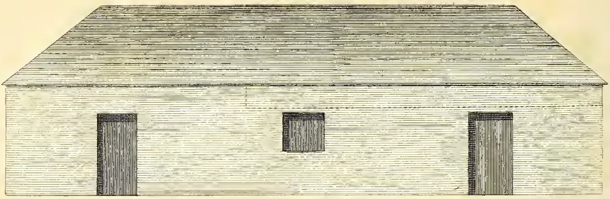
Plate IX.

Design for a Barn & small Thrashing Mill.

Vide Page 51.

Fig. 1



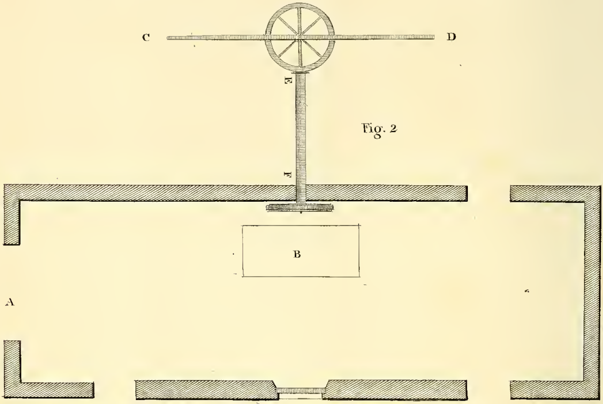
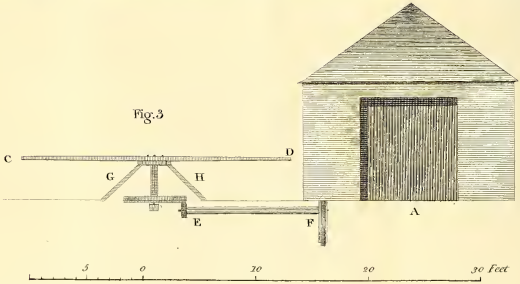


Fig. 2

Fig. 3



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Design for a Barn, Granary & powerful Thrashing Mill.

Vide Pages 51 & 52.

Fig.1

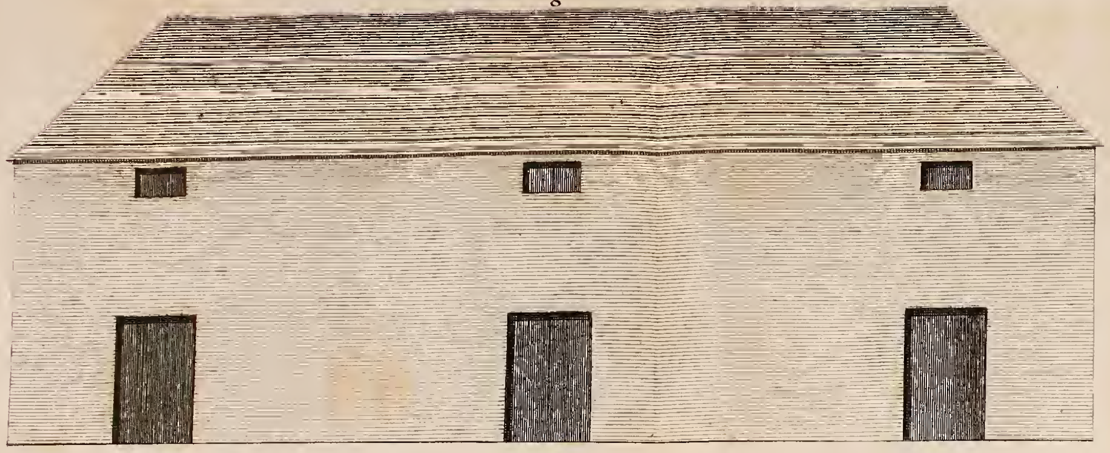


Fig.2

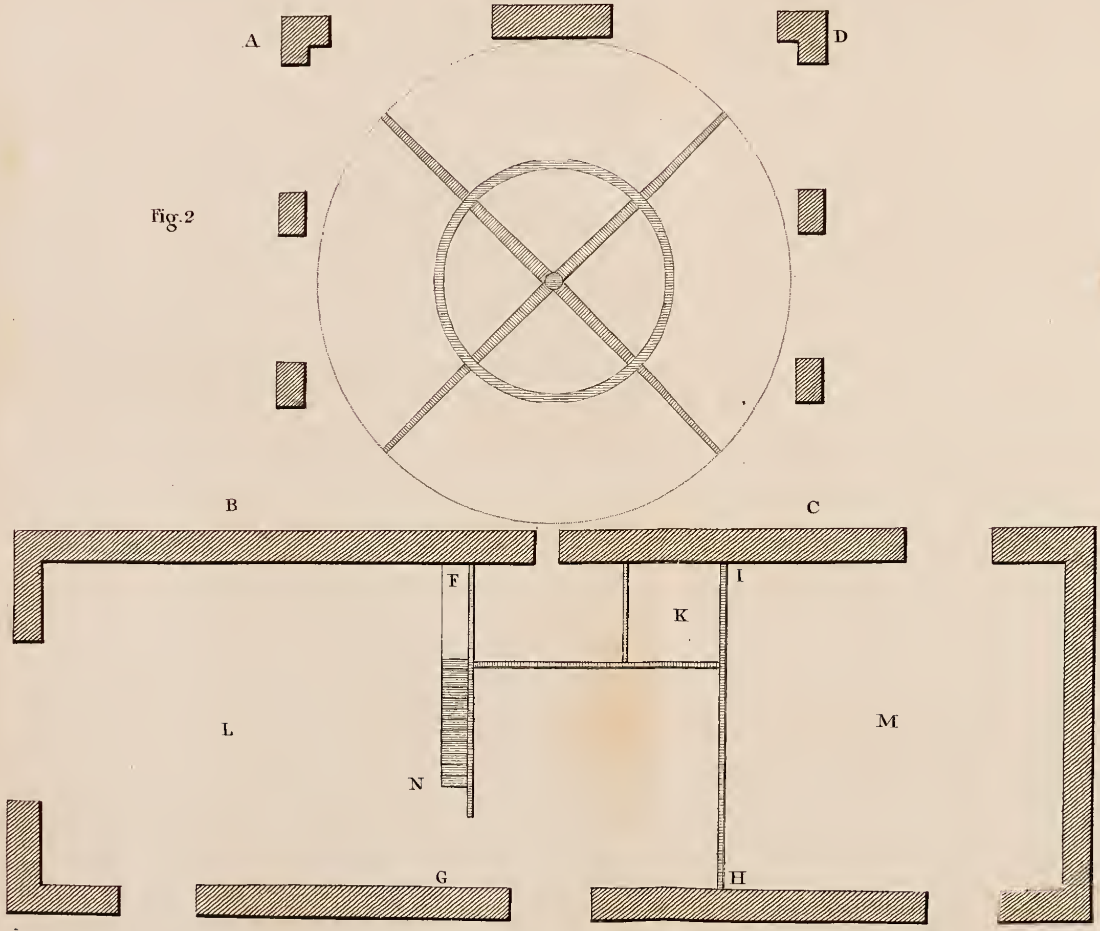
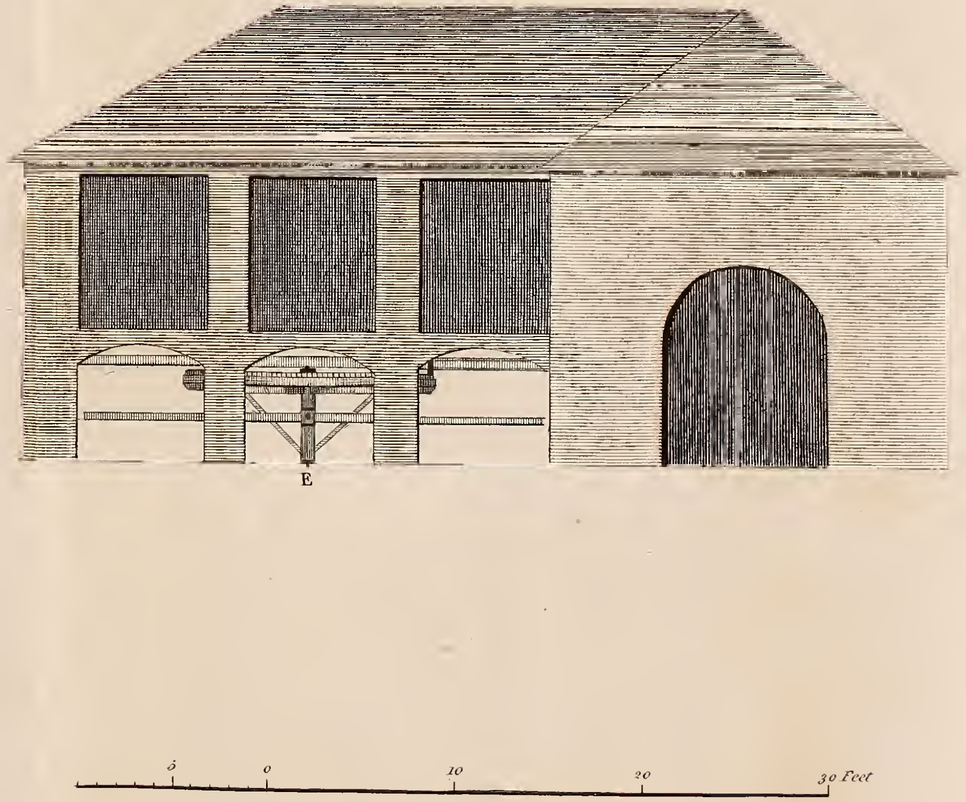


Fig.3



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workshop, root-house, or for keeping implements. Over these the corn is kept in the straw till thrashed. This building contains a great many conveniences under one roof, and although expensive, a good deal of masonry is saved by the large openings in the upper part, which also serve for admitting air to pass through.

Plate IX. Is a front and end elevation and plan of a small barn for a two-horse thrashing mill. This barn is only 50 feet in length within walls, and 16 feet wide.

The walls 10 feet high, which will admit a granary or loft 30 feet long above the thrashing mill, as represented by the dotted line in the elevation, denoting the extent of the granary and height of the floor from the ground. This floor is not carried the whole length of the barn, that there may be the more room in the one end for containing the corn before it is thrashed, which is taken in at the large door A in fig. 2. and 3. At B, fig. 2. is shown the space occupied by the thrashing mill, within the barn, being only ten feet by seven, including the distance from the wall. CD, fig. 2. and 3. is the horse beam or lever 24 feet long, with which the motion is communicated by a laying shaft EF through the wall to the thrashing mill within. There is no cover or shed here over the horse-path and parts without the barn, as is usually the case, excepting GH, which is closely boarded, to protect the wheels of the first movement from the weather, a part of one side being hung on hinges, for the purpose of opening, to grease those parts. The expence of such a mill will be from 30 to 40 pounds, according to its strength; but may be executed for less if slightly put together, which ought never to be permitted in any sort of machinery. For a particular description of thrashing mills, see *Implements*.

Plate X. A front and end elevation and plan of a barn and horse thrashing mill, upon a larger scale than the former: the mill being for three or four horses or cattle, and is supposed to clean or winnow the corn at the same time it is thrashing it. It may also be made to hoist it up to the granary above, and to split beans or cut straw if required, and to perform several other operations, as churning, pumping, grinding, &c. This barn and mill may suit a farm of any extent. The shed over the horse-path and first movements is generally made with a conical roof, and for no other use than covering that path: the expence of this roof is considerable, it is therefore proper it should be made to answer other purposes besides. In this design it is made square, as shown in fig. 2. by ABCD; the dotted circle is the horse-path, in the centre of which stands the upright axle at E, fig. 3. Above this, by carrying up the pillars to a proper height, is obtained a very convenient place either for putting corn in the straw till thrashed, or for keeping straw or hay; or it may be made to serve the purpose of a granary. In either case, however, it will be necessary to construct the floor, so as to support the weight upon it without sinking in the middle, as is shown in the Practical Treatise on Rural Improvements. A communication with the barn may be made near the thrashing mill at F in fig. 2. which would afford an easy access to the mill in case of corn being lodged there to be thrashed. The thrashing mill in this barn is erected on a floor about seven or eight feet above the ground floor, to give room for the fanners or winnowing machine below it. This floor may be extended the whole breadth of the barn, and about 15 feet or more towards I, from the back part of the mill at F, by which, and being properly partitioned below, a very necessary and useful division FGHI will be got for containing the clean corn till hoisted up to the granary. The doors of this place may be locked by the farmer if he chooses, to prevent any other person having access to his unmeasured corn,

even while thrashing it. The space at K will contain the chaff blown from the fanners. There is a door through the partition at G to render the communication more easy and expeditious from the part L where the unthrashed corn is laid, as it may be necessary to look frequently below while the mill is going; there might also be a door in the partition at H, but this is not so necessary, for the farmer can easily see what his servants are about at M where the straw goes, by standing on the thrashing mill floor, to which there should be steps up at N. This thrashing mill may be made also to rake away the straw, and to throw it down to the part M, which will save a person raking from the mill. The expence of this thrashing mill, if made to clean the corn and rake away the straw only (which in general will be found sufficient) will amount to about £50. exclusive of flooring, &c. If made to hoist up the corn, to split peas or beans, and cut straw, from six to ten pounds more for each of these operations; and for other machinery, according to the manner of constructing it.

Plate XI. Contains two elevations, a section and plan of a barn, with a thrashing mill that goes by water, cleans the corn at the same time it is thrashing it, hoists it up into the granary above, grinds it into meal, and makes pot or pearl barley, all by the same water wheel. I erected this barn and these mills in the year 1792, at Kilrie, in Fifeshire, and have found them to answer so extremely well, that besides the advantages of the thrashing mill, the other mills pay near 20 per cent. of the whole original outlay. The thrashing mill has sometimes thrashed and cleaned in the space of one hour, above 12 bolls of oats, which is more than 71 Winchester bushels, and requires six people to attend it while thrashing at this rate. A particular description of all the parts of this mill being given in the work already referred to,* it is unnecessary to detail them here. The following is a general description of it:

Fig. 1. Elevation of the front. The end A is intended to be joined to other offices, as stables, &c. leaving an arch 10 feet wide to admit loaded carts to the barn. 1. a door into the side of the barn, and to the upper part of the mill; 2. door at which the straw is thrown out when thrashed; 3. door into the lower part of the mill; 4. the water hole, through which the water is conveyed in troughs to an overshot water wheel; 5. back spout in which the water runs, when set off the water wheel; 6. windows of the granary.

Fig. 2. Is a longitudinal section, or rather a view of the inside, showing the position of the machinery and manner of working the thrashing mill. AB level of the barn floor. CD level of the lower mill floor. EF level of the upper mill floor. GH granary floor. 1. thrashing mill with hopper and fanners below; 2. person feeding the thrashing mill; 3. person raking away the straw; 4. person handing up the sheaves of corn to the feeder. Besides these it requires one or two to shake the straw, and sometimes if much water on, another person to feed the mill. 5. chaff-hole; 6. water wheel; 7. water troughs; 8. back spout; 9. the corn mill and hopper, &c.; 10. sack tackle for hoisting sacks into the granary; 11. partition of a small writing office in the angle above the water wheel; 12. door into the kiln, which has also a spout from the granary. The barley mill is not represented here, as it would conceal some of the other machinery.

Fig. 3. Is the end elevation. 1. water troughs which conduct the water into the aperture 4, shown in fig. 1.; under these troughs loaded carts, &c. go to or from the mills or barn yard;

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* Pract. Treat. on Rur. Imp.

Plate XI

Barn & Granary with Water Thrashing Mill, Corn & Barley Mill &c. at Kilrie in Fifeshire.

Vide Pages 52&53.

Fig: 1

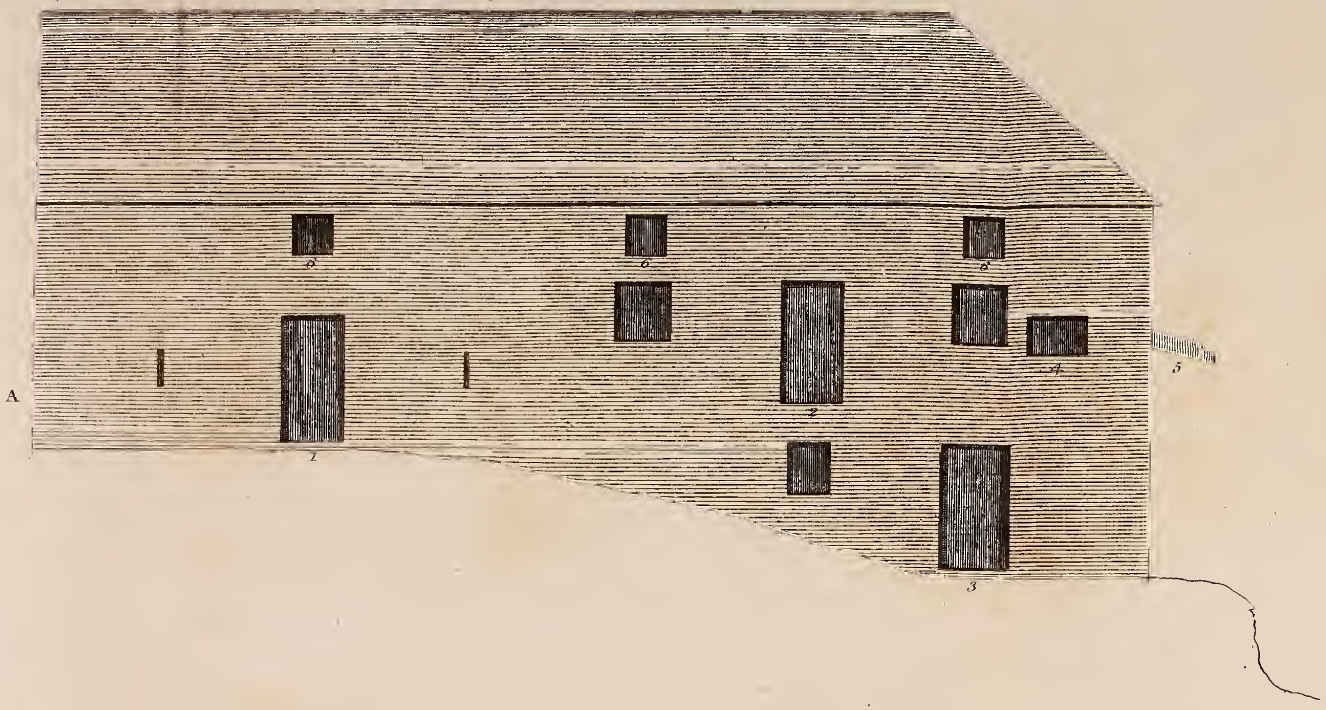

Fig: 3

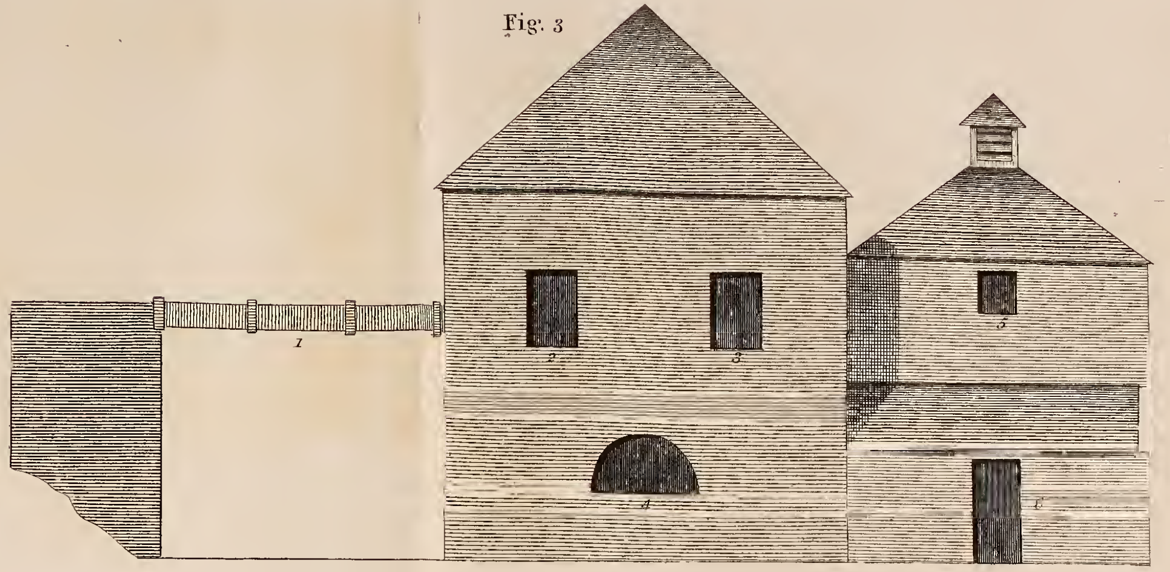

Fig: 2

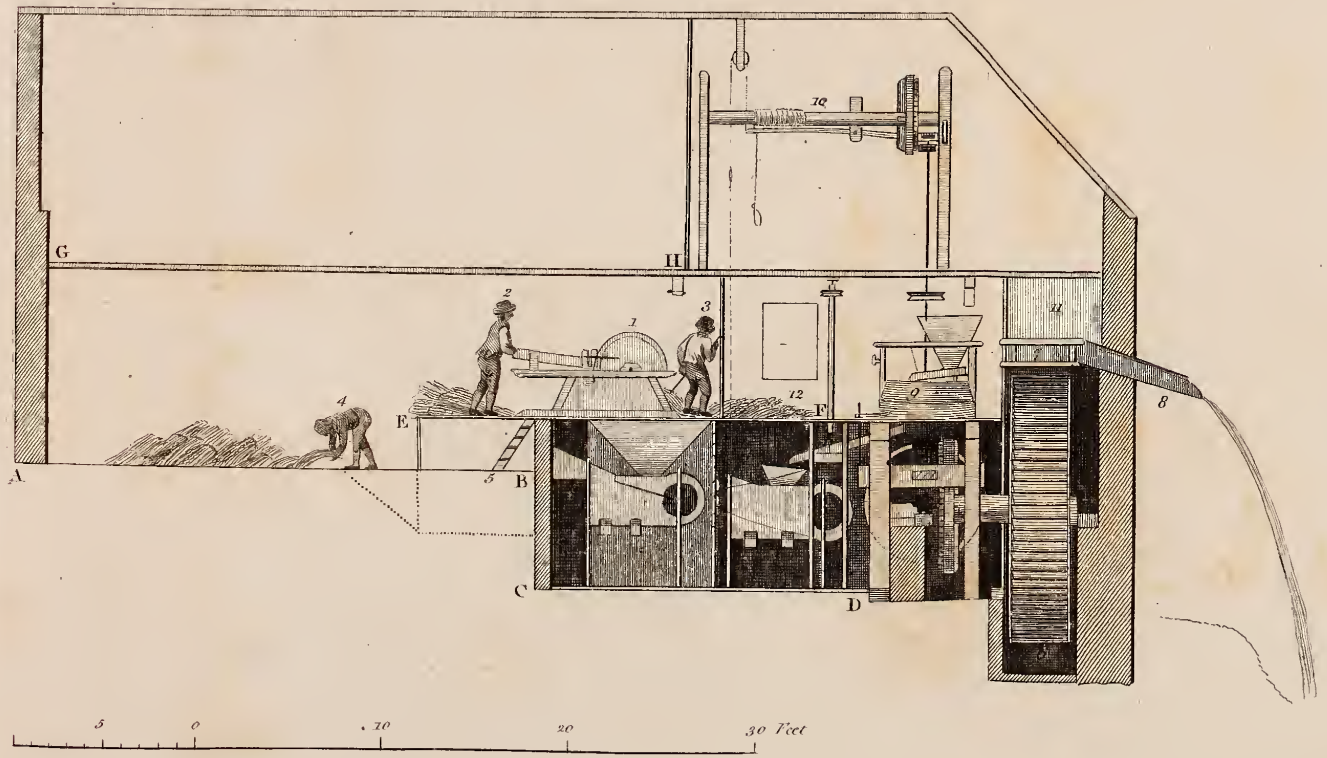

Fig: 4

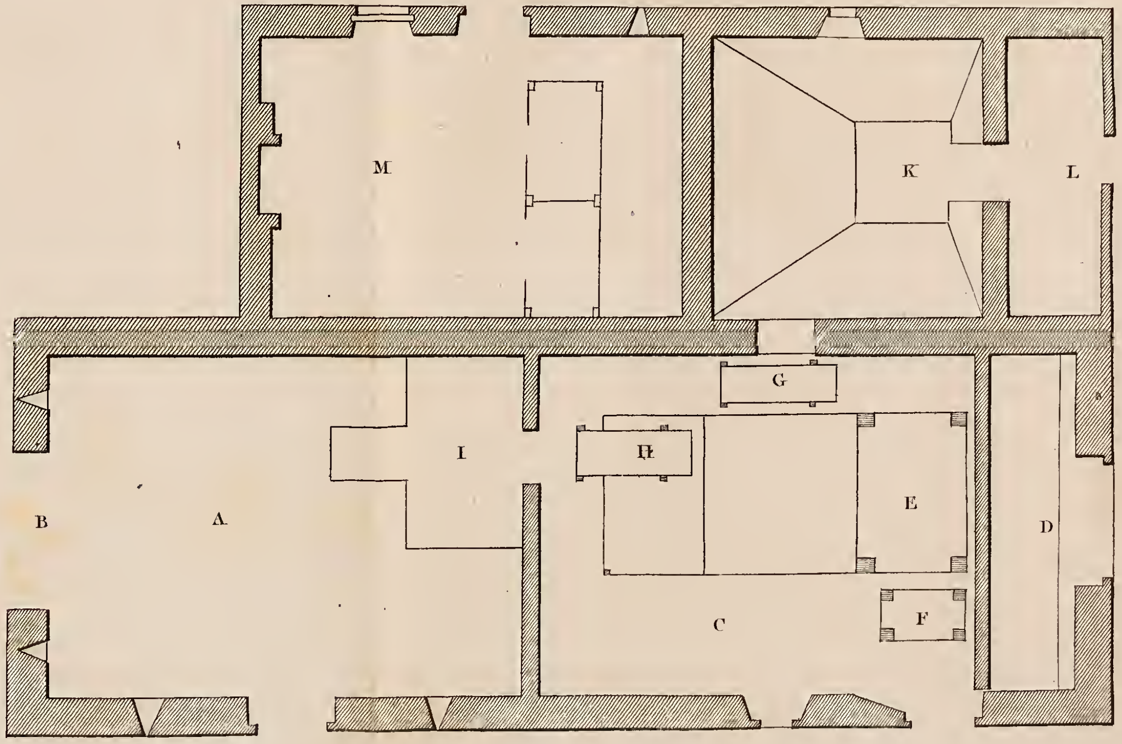

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Plate XII

Curious Granary

Vide Pages 53 & 54.

Fig. 1

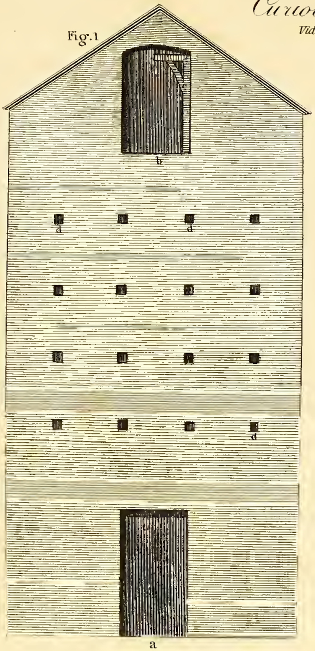


Fig. 2

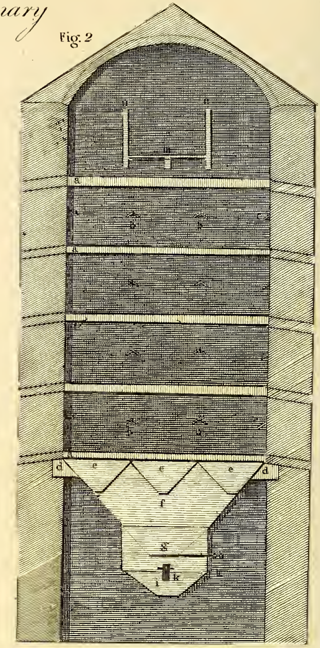


Fig. 3

Fig. 4

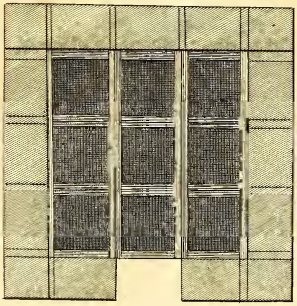
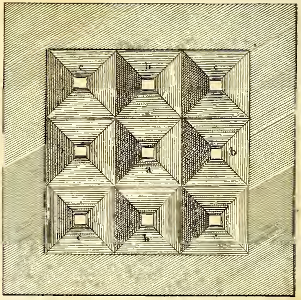
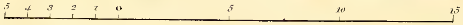


Fig. 5





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2. window (for uniformity's sake), out of which the water comes when let off the wheel, as shown by the spout at 5, fig. 1. and 8, fig. 2.; 3. window of the writing office; 4. opening to the water wheel when necessary to grease the outer gudgeon, or to repair or examine the wheel; 5. kiln for drying corn upon wire cloth; 6. a close shed (in some places called the kiln logie) for keeping dry the fuel when using it, and where the person sits to feed the fire.

Fig. 4. Ground plan. A the barn. B large door which admits a loaded cart into the barn. C lower mill. D water wheel. E herst framing, within which are the pit wheel and the three iron pinions that move all the machinery. F situation of the barley mill. G fanners for cleaning the shelling or oats when the husks are taken off in the first process to prepare them for grinding. H thrashing mill fanners, which blow the chaff backwards into the chaff-hole I. K lower part of the kiln where the fire is put. L kiln logie. M the miller's house.

The whole expence of this building and machinery (which would suit a farm of any size), exclusive of carriages, did not exceed £400. being much less than is often laid out in some places on barns, affording no other convenience than for storing corn in the straw.

Other constructions of barns for thrashing mills might be given, particularly of those for wind, which in some respects is a better mode of working them than by horses. A very excellent mill of this kind is erected at Captainhead in East Lothian, the sails of which are so constructed, that by a very ingenious and neat contrivance they can be furled and unfurled while the mill is going.* But where water can be had, it is by far the best manner of working a thrashing mill.

In most of the large barns now used there would be no difficulty whatever in erecting a thrashing mill, and acquiring every other convenience necessary. The principal thing is to obtain a person intelligent in those matters, who can plan out the building as it ought to be, and afterwards construct the mill properly.

There are many pretenders to this knowledge in various parts of the kingdom, who will undertake to do a great deal more than they are capable of performing.

Owing to these many gentlemen and farmers have been most egregiously imposed upon, and after being at the expence and trouble of erecting a thrashing mill, have neither found it to answer their own expectations, nor to correspond with the promises of the projector.

These very useful and profitable machines are on that account in some places even got into disrepute. If any thing contained in these observations should tend to retrieve their character in such places, or be the means of satisfying farmers in general, and others, of the facility and the astonishing advantages of erecting *proper* thrashing mills even in their present barns, it will afford the most pleasing gratification to think that this work (in some respects at least) is likely to answer the purpose for which it is intended—to promote the public good.

Plate XII. fig. 1. Front elevation; *a* door into the lower part. *b* door into the loft, to ascend to which a ladder is necessary; *c* a crane for hoisting sacks from below; *ddd*, &c. air-holes.

Fig. 2. Section or view of the inside; *aaaaa* are wooden spouts which reach from the air-holes on one side of the granary to those on the opposite side. These spouts are made of inch-deal, about six inches broad, and formed with an angle similar to those spouts that are sometimes

used to carry off the rain water that drops from the easings of the houses. They are laid across the granary, with the angle uppermost, as shewn in fig. 3.* *bbb*, &c. are the ends of similar spouts, which cross the other ones, and reach also, betwixt the air holes on the other two sides of the granary, as shown in fig. 4. *ccc*, &c. are half spouts, extending in the same manner to air-holes on each side. The air-holes must have a declivity outwards to prevent rain or snow beating in; and should likewise be secured with wire-cloth, to keep out insects or other vermin. *dd* is the floor of the granary, which is three yards square, and divided each way into three hoppers; *eee* of one square yard each, making in all nine hoppers, as shown by fig. 5.; *f* is a large hopper which encompasses all the rest, and has a slider at *g*, for opening occasionally when any grain is to be taken out.

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* See Pract. Treat. on Rur. Imp.

There is also another smaller hopper *i* suspended to this by four iron hasps *kk*, &c. which may be easily unfastened, if required, from the square deal box *oo*, fixed to the large hopper. Through the side of this box, the handle *h* of the slider must extend. This hopper is chiefly used for the convenience of taking out a small quantity, but is removed when a large quantity is to be taken out of the granary: *m* is a small loft where the sacks of grain are hoisted up and emptied over the sides or rails *nn*, from which it falls down, passes through the hopper, *ee*, till *f* is filled, (the slider *g* being closed); and as the corn is continued to be emptied from the loft, so the granary continues to fill, till up to the top, if required.

The spouts being all inverted, as already mentioned, and open below, it is clear that, although the granary is filled to the top, the corn will not, like a fluid, rise within the spouts, above the level of their lower edges; and thus there will be a vacuum left within every spout, through which the air will freely pass. These spouts are placed three feet distant from each other horizontally, from angle to angle, and eighteen inches vertically; that is, from those in one tier to those of the next tier which crosses it.

The holes in the bottoms of the hoppers *eee*, &c. should be so proportioned that one may not give vent to the grain faster than another; for which reason the aperture of the middle one *a*, fig. 5. should be the smallest, because there there is the least obstruction. The apertures *bbbb* should be somewhat larger, as the grain will meet with some little obstruction there, by the sides of the large hopper; and the apertures *cccc* should be the largest, as the obstruction in the angles will be greater than in any other part.

On viewing this granary, it is evident that, if filled with corn, and the slider *g* opened, the whole mass will be moved as the corn falls out, consequently that a new surface will successively be exposed to the air that passes through the air holes and wooden spouts; and thus by taking out a few bushels, perhaps, at *g*, the whole grain will be stirred above, without any further trouble. The half spouts at the sides are very useful for admitting air there also, and moving the grain, which would otherwise remain always close to the wall, which must be lined with deal, or plank, closely jointed.

Care must be taken, that the lower edges of the spouts be at least an inch lower than the bottom of the air-holes, that there may be no probability of their being interrupted.

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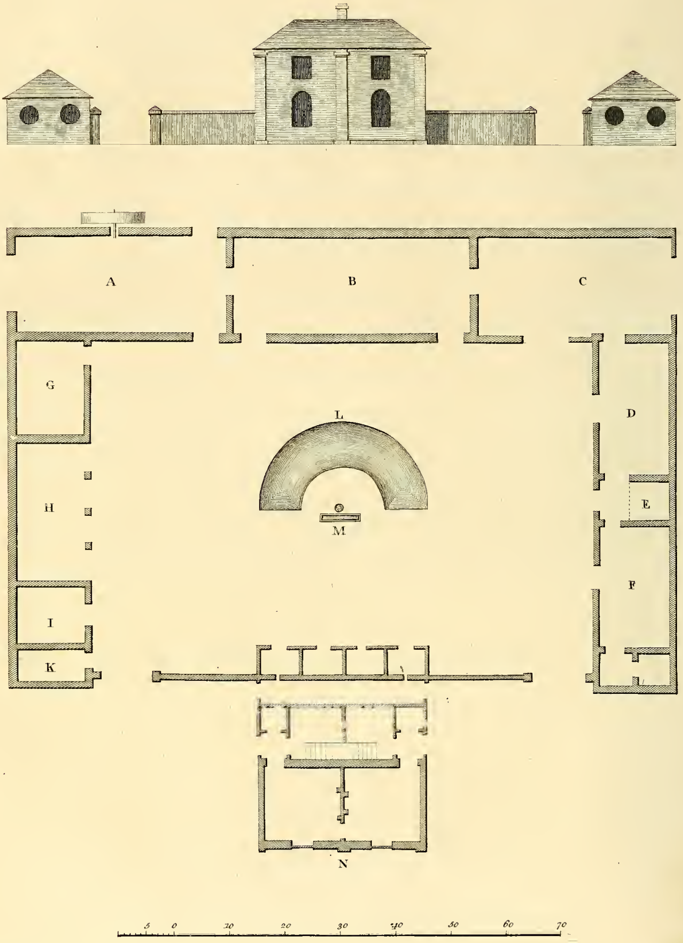
* Spouts like these might be advantageously applied in ricks or stacks to prevent them heating; but for this purpose should have slight cross bars at every foot or 15 inches in length.

Plate XIX.

Design for a Farm House & Offices.

Vide Page 55.



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Perhaps it might be an improvement to have a ventilator on the top of this granary, to make the current of air incline upwards as well as through the spouts.

The principle of this granary may be applied on any scale, from the corn-chest in the stable to the most extensive granary.

If a corn-chest is to be made on this plan, it should be of a cubical form, and the bottom of it made like a hopper, with a slider, as represented at *g*, or *i*, fig. 2. the aperture being placed about eighteen inches from the floor, to give sufficient room to take out the corn. The spouts will be easily fastened from side to side, and the air-holes should be covered with wire.

If a large granary on this principle is required, it may be divided into any number of divisions, similar to that already described; the cross spouts being conducted through air-holes in the partition walls, or to perpendicular square spouts in those partitions. In this manner, different sorts of grain may be kept in the same granary; as is more fully explained in the Practical Treatise on Rural Improvements, where a design of a granary of this sort, on a large scale, is given.

In constructing a granary merely for the accommodation of a farm, it is unnecessary to attend to all those circumstances, respecting strength, situation, &c. which ought to be observed in building an extensive granary, where large quantities of grain are sometimes deposited. A farmer seldom wishes to have a great deal of his thrashed corn on his hands at once; nevertheless, there ought, on every farm, to be a place of security, capable of containing, at least, one third or one half the grain produced annually on the farm.

Where the practice of housing corn is followed, there is little or no room within the barn for a granary; but where this is not the practice, particularly where there is a thrashing-mill, the granary may easily be made over the barn; which, with proper tackle for hoisting the sacks from below, is the most convenient and least expensive place a farmer can have it in.

Plate XIX. is an elevation and plan of a small farm house and offices, arranged in a way, it is presumed, that would be very convenient.

A the barn, with a water thrashing-mill.

B a straw-house, being a continuation of the barn above, for holding a quantity of straw after it is thrashed, or hay, that it may be at hand to give to the cattle in the feeding-house below; which is supposed to be constructed on the same principle (although the plan may be different) as shown in Plate VIII. The upper part of this straw-house may consist of pillars to support the roof, with about eight feet space between them, whereby a good deal of building will be saved. In the floor should be hatches at convenient distances, to put down the straw to the cattle below.

C a court for the dunghill, with a door to it from the feeding-house, and a large entry at the other end, to admit carts to take way the dung. On the outside of this should be a urine pit, in the most convenient place, according to the form of the ground.

D a cow-house, with a door also to the dung-court.

E a calf-pen, with a rail across to keep in the calves, even though the doors are all open.

F a stable, with a harness-room, and place for keeping corn.

G a root-house, over which, or over the barn, may be a granary.

H shed for carts, &c.

I place for keeping large implements, as ploughs, harrows, &c.

K for keeping smaller implements, as spades, shovels, rakes, forks, &c.; and for laying by old iron, and many other useful things, that might otherwise be lost or thrown away.

L is a pond for washing the horse's feet. It slopes down from each extremity towards the middle at L, where it is deepest, that the horses may easily go in at one end, and come out at the other. It should have a rail at each end, to prevent them going in during frost, or when not wanted to go.

M is a pump, with a trough, for the horses or cattle to drink in; especially while other water is frozen, or when the water in the pond is dirty; but if it can be contrived that the water which drives the mill, shall run through this pond, it will at all times be clean and wholesome.

N is the ground plan of the dwelling-house, with dairy, pantry, and various conveniences behind for keeping swine, poultry, coals, &c.

The stair to the upper chambers rises from either side to the same landing place; from whence are a few steps up to the chamber floor. But if any of the former plans given are preferred for the dwelling-house, they will suit the same arrangement.

One material advantage of this arrangement is, that the fodder consumed upon the farm goes progressively forward from the barn yard, through the cattle to the dunghill, without the unnecessary labour generally occasioned by carrying it backwards and forwards: for it comes from the barn yard into the barn A, where it is thrashed. It is then put in the straw-house at B, and given to the cattle immediately below; and after passing through them, it is thrown into the dung-court at C. A rick of straw, or hay, built behind the stable F, or cow-house D, or in a shed contiguous to either, with proper conveniences, will have the same progressive course to the dunghill; for, it will be observed, the communication from these is equally easy from without or within; the rail across the calf-pen being intended chiefly to keep in the calves, while the doors on each side are open when conveying the dung that way from the stable to the dunghill.

Plate XX. An elevation and plan of a farm-house and offices, with two courts, or farm yards.

A is the barn, with a water thrashing-mill.

BB are sheds for holding the straw immediately after being thrashed, by carrying it either way, as is most convenient for feeding or littering the cattle, or till otherwise disposed of.

C a stable.

D a cow-house, or feeding-house. From both of these are back doors to the dung-court, which is supposed to be behind.

E workshop, and for holding timber and implements, or wheels, &c. blocked out.

F house for large and small implements, with spar doors to admit air.

G shed for carts, &c.

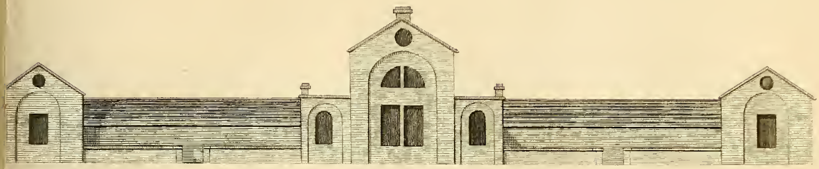
H poultry place, with a pond in it. The nests for the poultry, and roosting places, are under small sheds at each end.

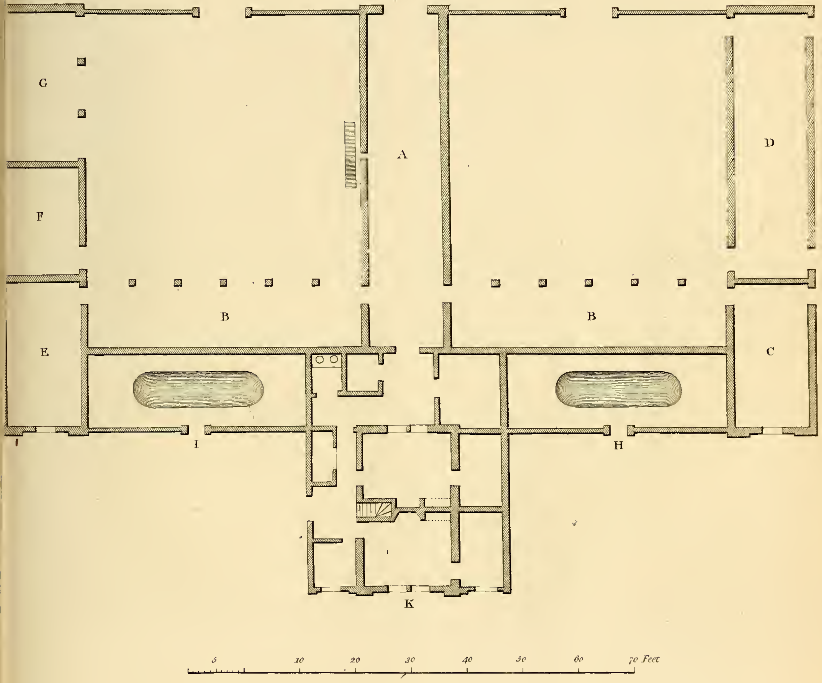
I a similar place, which may be used for keeping rabbits; and the pond may be stocked with fish; both of which, if carefully managed, will, in many places, be convenient as well as profitable. The front wall of these two places is built only two and a half feet high, with a

Plate XX.

Design for a Farm House and Offices, with two Farm Yards.

Vide Pages 56 & 57.





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coping, on which is a paling six feet high. This may be made of thin deal, or slabs, set on end; which, being pointed sharp at top, will prevent the poultry flying over, and protect whatever may be kept there from being disturbed.

K ground plan of the dwelling-house, with conveniences of different kinds annexed to it.

In this arrangement, as well as in the former, the fodder goes progressively forward, from the barn yard to the dunghill.

A variety of other arrangements might be given, but these two examples, it is hoped, are sufficient to illustrate the observations already made, and to give a general idea of arranging farm offices, so as to suit any form of ground, and any kind of farm; for it is upon a strict examination and a due consideration of these, that the most commodious plan of the offices suitable to a farm can be properly laid down. Several other conveniences mentioned in the preceding observations, might also have been delineated; but the principal buildings being shown and arranged, it was thought unnecessary to crowd the plates with every little conveniency that might have been noticed; the position of any others that may be required, being easily determined on after the principal ones are fixed.

Sometimes a small square of sheds for cattle is constructed within the court of offices: the sides of this square being parallel to those of the square of offices, at the distance of 10, 15, or 20 feet, according to the extent required. In this case, the cattle are generally fed from without; but the dunghill being in the middle of the interior square, and the space altogether being in general so much confined, it is difficult to keep the cattle clean, or to preserve their dung in a proper state for manure.

For these reasons, as well as for the additional expence of building and roofing in that way, it is not a plan at all to be recommended.

The plan containing two court yards is very convenient, in the event of allowing young stock of different kinds to go at large during winter; as in that case they may easily be kept separate, and fed and attended with no more trouble than if together. In the one court might be kept the young horses, in the other the cattle; or in one of them might be sheds for sheep, if necessary.

II. *Memoir on the Distribution of Farms, Farm Buildings, &c.* *By* Rowland Hunt, *Esq.*

To have no system whatever, and to be a slave to system, are the two great extremes to be equally avoided. The placing all the farm houses of one estate in one village, was often an error in disposition, as it relates to agriculture, but was a matter of necessity in our ancestors, when security was less known in Great Britain than at present.

In the evening, the cattle were in many places driven within a certain precinct, and each village furnished one or two armed horsemen for immediate defence, or for pursuit after cattle driven away by public robbers. Civilization is still benefited by means of schools, and the commerce of society in a village: it is also obvious, that three farm houses in each village cannot be too many, because each may occupy a space of 120 degrees of a circle, which at about half a mile distance, will give to each farm from 200 to 300 acres of land, allowing the garden and small closes to other occupiers: more than three farms would interrupt the great object in view, which is the vicinity of the land to the farm-yard; and less appears to me an unnecessary sacrifice to the plan of separation.

It is necessary to say, once for all, that from the nature and division of land, from the means of obtaining water, &c. the position of villages must be so various, that no one system is recommended as being of superior utility, until every variation of circumstances has been allowed its due weight.

Had I a property of 1400 acres of farming land to dispose of, I would appropriate fifty acres to the smaller tenements in the village, or near it; about six hundred and fifty acres to the three farms which would compose the circular area round the village; and three other farms, containing together seven hundred acres, I would place detached from the village, and from each other; each one in the central position of each farm, as circumstances should guide.

It is a question of much importance, what number of acres in *one* farm is the best quantity for the good of the country? It appears to me, that a great variety of sizes is on the whole to be preferred, that each farm may be adapted to the capital which occupies it: farms of considerable extent, have been found of late a great support to the welfare of this country, when in the neighbourhood of large bodies of mechanics or miners, because the weight which the one derives from property, as a yeoman, and the other from connection with numbers as a miner, has first produced a balance favourable to the peace of the country, and also has much aided the extraordinary supply needful to a populous neighbourhood. On the other hand, very small farms, such as will support two or three horses and a cow, are of use where vicinity to a market-town, a colliery, a lime-rock, or a canal, may cause frequent calls for a jobbing team: on either side of a canal such assistance completes its utility, and abates the demand for large and expensive teams of horses.

These and other *exceptions* duly allowed, it remains, what is the best quantity of acres for *agriculture* as such? The answer may be decisive: whatever quantity of land will make a farmer the inspector, and not the labourer, on his own farm, without permitting him to be the *commercial speculator* of various markets. If he is a labourer, his industry, however commendable in its principle, generally confines his judgment and narrows his views: when he is a factor, and a rider of markets, his attention is too much scattered, his love of progressive improvement cools apace; and *the making haste to grow rich*, seduces him from the plain and direct road of honest advancement.

A farm of fifty acres makes many a pauper; a farm of a thousand acres makes many a bankrupt: from one hundred and fifty to three hundred acres I have generally seen to produce the best effects; though larger and smaller farms, may, in particular cases, not lead to the bad consequences above pointed out.

The *principle* of *improvement*, on which money should be laid out, is another very important consideration; the real and permanent interest of a landlord and tenant are the same, nor can there be a more degrading or ridiculous position, than that of landlord and tenant sitting down to try who most shall impoverish the other. It is of the greatest advantage to each, that the other should be at his ease: if I pardoned the folly of either, it should be that of the tenant, whose education probably furnishes fewer opportunities of general reflection, and not many occasions of liberal experiment. The opinion of the landlord, when well formed, should be firmly supported. Let us then consider how he might reason. He may suppose that in proportion as the tenant has more facility of getting money he will more readily pay it;—that the tenant has only a temporary, and he a permanent, interest in the farm; he should therefore determine that *permanent* expences should fall on himself; and if judgment is wanted in construction or arrangement he must supply it. That the land in its naked or unimproved state is of a certain value; and that when built on, drained, &c. it will be worth a certain sum more; let, therefore, a rent be put on his land, and an interest, a full but not an excessive one, be put on his money, and let the tenant contribute by carriage, or by collecting draining materials, &c. as his *douceur* to the bargain, so that his assistance shall be gradual and not oppressive. Let the landlord purchase the manure, the straw, &c. from the going off tenants, and do every thing in his power to make the *going off* to be of the least possible benefit. By proper encouragement, and falling a little into his methods when no material injury is done to the main design, to attach the tenant to the place; by these means, giving him every reason to put confidence in his landlord while he does well, with some cause of apprehension if he perseveres in an opposite conduct.

Above all things let the landlord know his tenants *himself*; the judgment of others will much assist him; their skill, talents, and correction will be of use; but little real good is done where the land-owner is not personally attentive.

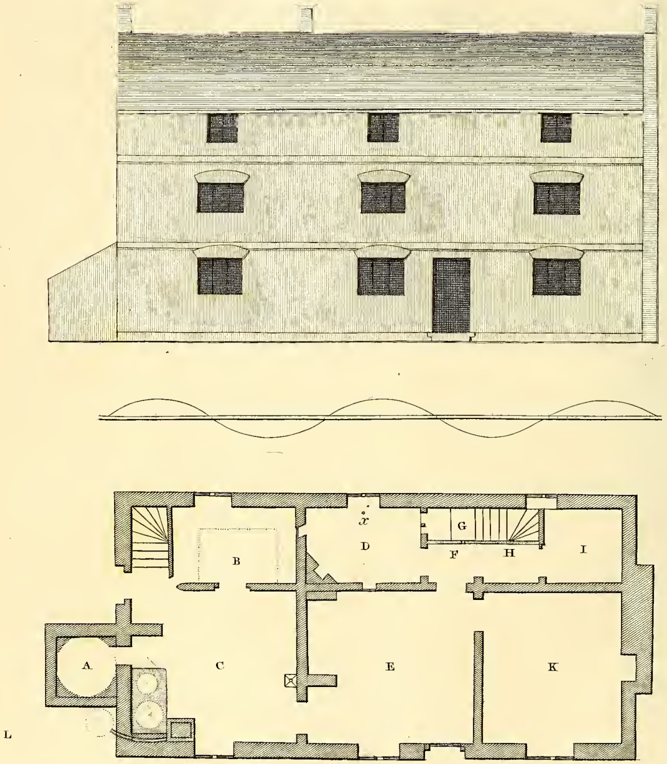
What is written above is so very obvious, that I should be unwilling to offer it to observation, if I had not seen the true principle of dealing with tenants, failed in nine times out of ten, by too much eagerness to get rich, or by too little steadiness and perseverance in a reasonable demand.

We will suppose, therefore, the value of the land to be settled; and the principle of laying out money to be ascertained; and having also considered the size of each farm, and their position, as it relates to the estate in general, we will proceed to the situation and construction of the buildings, and of what belongs to them.

Where the *situation* of a *farm house* and yard may be *chosen*, it is desirable that it should be as near as possible to the centre of the farm, all other circumstances well considered; that it should be shaded by hills or woods from the north and east, but quite open to the south, with a few points to the east and west; a bank in a valley will generally furnish most of these advantages, which, if obtained, are a benefit beyond all calculation. The dryness of the grain and provender, and the health and fecundity of the stock, being nearly insured by such a position, as well as the health, activity, and cheerfulness of the inhabitants and their labourers.

Water will probably be found in such a situation, but if it is not, the roofs of the buildings when slated will give a supply, and particularly in winter, when the cattle are generally in the fold.

Fenced roads, both public and private, should be considered as the commu-



A. *Shed & Oven.*
B. *Milk House.*
C. *Back Kitchin.*
D. *Small Parlour.*
E. *Kitchin.*
F.G. *Passage & Cupboard.*
L. *Pump.*
H. *Stair cases up & down.*
I. *Meat Pantry.*
K. *Parlour.*

R Hunt del.t

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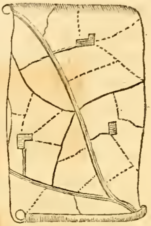
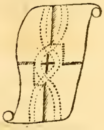
nications between fields of the *same* occupier, and not as boundaries between two of them, unless circumstances demand it.



Each farmer has a better communication with his own farm and fields, and interferes less with his neighbour, when a boundary fence *not* to be passed, is their only point of contact. The mode of making roads the boundaries, looks neater on a *map*, but the object of separation is best attained by avoiding it.

The open farm roads should be, as much as possible, placed on the headlands of the fields; that is, the portion of land adjacent to the hedge on which the plough is turned; and every opportunity should be taken of placing gates, so that either side of a hedge may be used as a road, to avoid driving over a field in tillage. This may be easily effected by a few gates, one placed in the line of the headland, not too near each hedge, or to each other, so that a waggon may easily drive through them on the right or left, as the crops may require; a few hurdles may guard each field in grain alternately, and will furnish a useful position to detain sheep, colts, &c. These precautions, although they may appear too minute or particular in a drawing, do in fact prevent an infinite deal of mischief to the farmer, and much assist the cause of industry. To obtain water, in as many fields as possible, need scarcely be mentioned, or to contrive that one pond shall supply several inclosures. All these points should be well considered *before* the position of the house and farm is determined on. The great principle which should guide the construction of a farm house and yard is *inspection*, from a single point.



General Bentham's Πανόπτικον is the perfection of this system, of which we must try to obtain as much as can be adapted. I had formed one farm house and yard with this object in view, before I had the good fortune to be introduced to the acquaintance of the General, by whose observations I was much confirmed in a system, which might be infinitely improved by a person of his very superior talents. The distribution of water may be managed with like attention to its position and direction.

No. 1. The plan of a farm house; and No. 2. that of the same house on a reduced scale, with the farm yard annexed, was the second attempt I made on this principle. The position of the farmer's wife, as home inspector, is supposed in No. 1. to be at x in the small parlour D. Within the house, she looks through a door with panes of glass fixed in it, along the passage F and G, on the side of which are the cupboard and cellar; beyond, she looks on the door of the meat larder at I. When the doors are opened, she can see the sempstress, tailor, or children, at work in the parlour K. The milk-house, back door, and staircase, are commanded through two glazed openings on either end of the milk-house; and through another she sees the servants at the kitchen fire; and also through the opposite window the garden, and the garden entrance into the kitchen: having thus almost the whole of the ground-floor under her observation, though employed in a single spot. *Without* the house (see No. 2.), she commands the whole of the farm yard, barns, and stack yard in part, and the garden in some measure, as above.

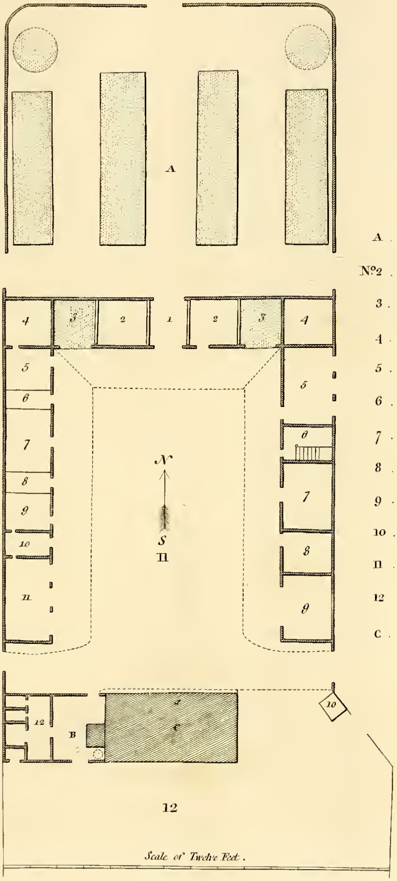
This position, in case of illness, will much assist the farmer himself, and satisfy him that things are going on well: and if the characters of the farmer and of his wife are good, in temper and judgment, the servants will improve and exert themselves, because their efforts are noticed; they should consider that nothing is more opposite than the character of an inspector, and that of a spy.

The water in No. 1. and 2. is situated so as to carry itself, when pumped, to the place where wanted—into the boilers, the pig-sties, the pump court, and the garden. When brewed, the beer will run down a trough into a clean oak tunnel, on the east side of the back kitchen E, into the cellar, which is under the parlour K. On the east side of the house, opposite to the horse block, is an enlarged window, with wooden shutters, through which the vessels are carried round the house to the pump court, so that the house need not be interrupted by the usual processes of brewing, which are a great impediment to other work, as well as to neatness. The fire in the back kitchen, which is the great laboratory of a farm house, is placed at the greatest possible distance from the farm yard, and as near as possible to the pump.

In the plan No. 2. the pig-sties, 12, on the west of the house have the advantage of pump water, and also of the kitchen wash, which is conveyed by a pipe through the wall into the pump court. 11. Is the shed for young cattle; 10. the calves kit, adjacent to 9, the cow-house meant for calving; 8. a straw bin; 7. a double cow-house; 6. a straw bin; 5. a single cow-house, with an opening to a barn bag, that when emptied as the spring advances, the larger calves may have more liberty; 4. 3. 2. act as a separate barn; 1. the gateway, separating each barn with sides of a complete building, so that each might stand independently of the other. 5. On the eastern side, is a cart-house, with a granary over it; 6. is the ostlery, or place for gearing, chopping straw, &c. with a staircase to the granary; 7. a double stable; 8. a single one;

Plate .XXII.

R.Hunt Esq.r



N.o 1 . *Gateway* .
2 . *Bay* .
3 . *Barn Floor* .
4 . *Bay* .
5 . *Cow-house* .
6 . *Straw Bin* .
7 . *Cow-house* .
8 . *Straw Bin* .
9 . *Cow-house* .
10 . *Calves Kit* .
11 . *Shed* .
12 . *Pig Sties &c* .
B . *Pump & Court* .

A . *Stack Yard* .
N.o 2 . *Bay* .
3 . *Barn Floor* .
4 . *Bay* .
5 . *Cart House* .
6 . *Ostlery* .
7 . *Double Stable* .
8 . *Single Stable* .
9 . *Feeding Shed* .
10 . *Horse-block* .
11 . *Farm Yard* .
12 . *Garden* .
C . *Position of House - &c. of Inspector* .

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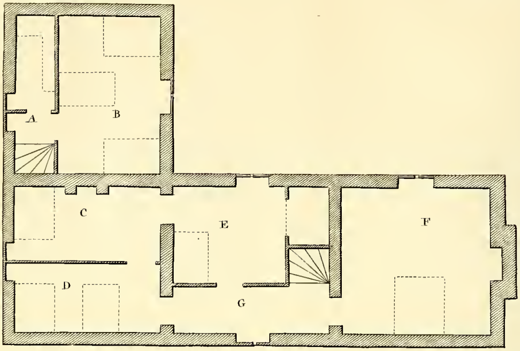
N.o 3. by R. Hunt Esq.r



Upper Story.

A. Cheese Room.

B. Mens Bed chamber.

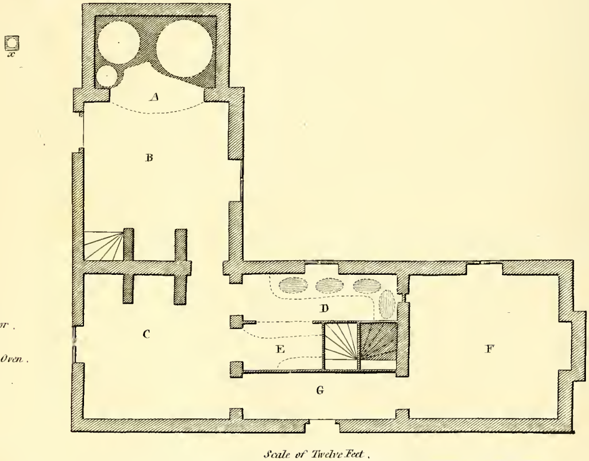
C. Bed Chamber.

D. Bed Chamber.

E. Bed Chamber.

F. Best Bed chamber.

G. Passage.



Ground Floor.

A. x Pump. Boilers. Oven.

B. Back Kitchin.

C. Best Kitchin.

D. Milk Room.

E. Pantry

F. Parlour

G. Passage.

Scale of Twelve Feet.

R. Hunt del.t

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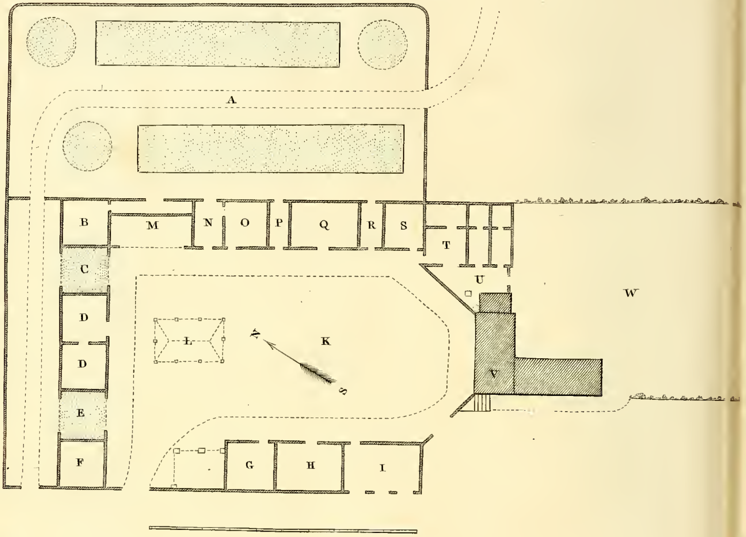
No 4 by R Hunt Esqr

Plate XX

A Stack Yard
B Bay
C Floor
D Bay

D Bay
E Floor
F Bay
G Stable

H Stable
I Cart house
K Farm Yard
L Pump



Scale of Twelve Feet

M Feeding Shed
N Calve's Kit
O Cow House
P Straw Bin

Q Cow ties
R Straw Bin
S Cow ties
T Pig sties

V Pump Court
U House
W Garden
X Pond

R Hunt delt

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9. a feeding shed. The soak of the manure of the farm yard runs through a sough on the western side; under 6. a straw bin, and may therefore be opened if necessary, without injury to the building. The portion of *raised* land on which this farm yard stands is narrow, and therefore I could not spread it more to the east and west, and bring the barn nearer, as I could have wished, to the house: but on the whole I am satisfied with it, and so is the farmer; it cost as near as can be ascertained one thousand pounds (the carriage was not charged); and it bears an interest of 5 per cent. which is paid willingly.

No. 3. In this an attempt has been made to obtain some of the above advantages in a repaired farm building, which was not calculated to unite them all.

A smaller farm house is represented, in which the mistress is supposed to be more at work among her servants in the kitchen at E, or sometimes in the parlour at F. In the latter place, through a glazed opening in the wall, she overlooks her milk-house and pantry, the cellar stairs, and the garden; in the kitchen she overlooks the middel part of the house, where the stores are preserved, the back kitchen, boilers, &c. where the work is carried on, and also the whole of the farm yard, see No. 4.

No. 4. In this plan the rise of ground was of greater extent from NE to NW. The stack yard is therefore placed on the NE side; the pump is placed with the like advantage as in the former plan, so that the water need not *be carried*. As this farm yard is wider than the former one, a shed for young cattle is placed in the centre of it, adjacent to the barns, which I recommend to be done wherever it may with propriety; being open on all sides a stronger beast has not so decisive an advantage over a weaker, as in an inclosed shed; it should be raised at least two feet above the bottom of the farm yard, so that the straw and manure may fall from it, and the cattle be completely dry. A colt house is dotted on the SW side of the stable, which should not be forgotten, as cattle and horses do not well agree together: the same objects are in view in this plan as in No. 2. a particular description is therefore unnecessary. If this building had been new, about six hundred pounds might have built it.

It is an error to suppose that new building is cheaper than the repair of old buildings, except in extreme cases; it may want even more judgment, because new improvements are to be ingrafted on ill constructed edifices; it may, however, be well worth while: carriage is saved and timber got, and something may be learned from past times, though perhaps in farm buildings less than in any other point: the advantage of aspect, and of good arrangements to shorten labour, seem to have been little studied by our ancestors. It should be recollected, that all money laid out on an estate *unnecessarily*, is a *burden* to the tenant, or a *loss* to the landlord.

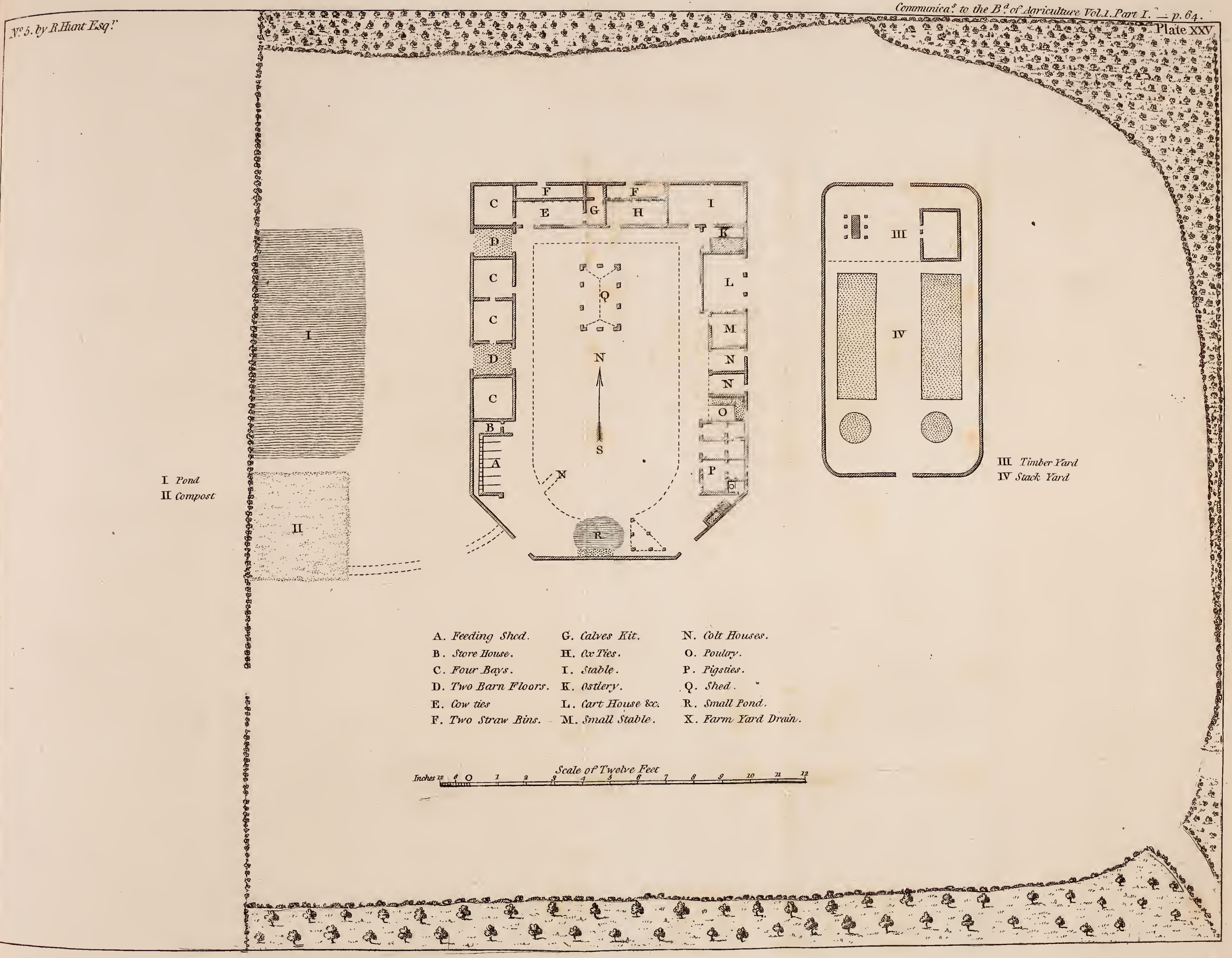
No. 5. represents a farm yard belonging to a gentleman's house, at some distance from the mansion itself.

On the left, A is a shed and stalls for feeding oxen. B is a small store-house for turnips, which communicates with C, a bag of the barn, and may be used occasionally as a repository for food in hard weather: a bag, as in other cases, is placed one on each side of the two barn-floors. The upper bag on the NW angle, communicates with the cow-house, to be used occasionally for calves when kept for rearing; and the bag in the centre opens to the yard, both for clearing the barns, and also for the admission of sheep in the shearing time. E is the cow-house. G the calves kit. K the ox-house. F the bins for provender, fitted from the talents above. I the great stable. K the ostlery, for chopping of straw, &c. with a small bed-room over it for a waggoner's boy, and with a staircase leading to it, and also to the granary, which is over L the cart-house. M is a small stable. NN two colt-houses which admit the colts from *without*, with pailed gates to carry the dung to the farm yard within. O the place for poultry, the fowls going over the loft which covers the pigsties, and which should be made light and airy by means of wire lattices. P the pig-sties with a covered feeding trough on hanging doors, and with a large deep stone cistern adjacent, covered with a wooden lid to preserve the grains as long as possible. R is a small pond, with a goose-crew at the head of it, and a small railed triangular space on the right, within which young pigs may be fed unmolested by cattle; or if pailed, poultry may be fed, and the pigs at that time kept out; so that each party may have the food allotted to them.

At x, begins the sough which conveys the farm yard soak, till it arrives at the bed of compost at II, and there enriches the soil; which if removed often enough, and turned, is scarcely of less value than the original dunghill; and thus is completed the agricultural doctrine "that nothing be lost." I. is the principal pond or watering place. III. IV. compose a timber yard and stack yard combined to advantage; the same driving way belongs to both; the building in which the timber is laid up, or worked, may be roofed like a stack; the two round stacks of corn, and also *one* of the long stack frames, should be raised on frames high enough for the sheep to take shelter under in a deep snow, and the other frame supposed to contain provender, will feed them with the least waste, as they neither can lie on their food or tread on it; and therefore they only take what they consume, and do no injury to the rest.

Plate XXV

N^{o} 5. by R. Hunt Esq^{r}.



The circular figures of the corn stacks, and their shade falling on the flat sides of the others, produce a very pleasing effect, not to be neglected in *this* situation, when nothing is sacrificed to it.

Two observations arise with regard to a gentleman's farm yard, as such; *where*, in point of judgment, it should be placed? and whether, in point of taste, it may form a part of the pleasure ground?

The first is of much consequence; for if united to the stables, garden, &c. the mansion cannot be occupied *separately* with comfort, the owner, on a change of situation, is often driven away. All improvements in or about a family residence, should be so contrived, that the owner, with the full income of the property, may be accommodated; and also that a person with less than half the fortune *may* reside with comfort; every estate finds the want of such an arrangement two or three times in a century; it should therefore be provided for in every building, and in none more than in the position of a farm yard, which induces me to make the observation in this place. It will tend to the frequent residence of some part of a family, and therefore is of no small importance to the agricultural support of an estate.

The next question, whether a farm yard should be shewn, or not? I am inclined to answer in the affirmative. The Abbè Delisle has beautifully illustrated this point in his celebrated work, *Les Jardins*. It certainly costs less to shew it with propriety, than to hide or disguise it: it gives life and *motion* to a country scene; and if the labourers, male and female, have a jacket and hat allowed them, it is no bad opportunity of placing labour in a state and with the appearance of comfort and respectability: it furnishes a proper means of acquaintance between the opulent, and those who labour; and is no bad example to those who may want it. Making the farm yard a part of the pleasure ground, is the life and soul of inspection, and keeps the agent, and others, attentive to neatness and to propriety, because he is always subject to observation himself. The desperate schemes invented by professed surveyors, of raising mounds, sinking roads, boring holes through banks, and the like, with a thousand other tricks thrown in the way of opulence, tend only to increase expence, and to cast a gloom of magnificent solitude around a mansion. Whereas a judicious, but not a forced introduction of the farm and its accompaniments, adds chearfulness and business to the scene itself; and by shewing a union and proportional connexion between the different classes of society, it gives the air of a general and friendly intercourse, which, when properly conducted, is the true spirit of social life at a British residence.

III. *An Essay on Farm Houses, and their various appendant Offices, accompanied with Plans and Elevations, submitted to the Consideration of the Board of Agriculture. By* A. Crocker, *Land Surveyor, Frome.*

WHOEVER attentively examines the generality of farm houses, with their appendages, in all parts of the kingdom, will find, that they are mostly devoid of many conveniences and advantages, which they might have possessed, had they been constructed on that systematic plan which their importance requires, and which is absolutely necessary, towards a due regulation of the domestic concerns of a farm.

It was well observed, by an architect of high celebrity, in former days,* that, in every fabric, *three* things were necessary; namely, convenience, strength, and beauty. Although the latter point, may, in the construction of farm houses be, in some measure, dispensed with, yet the two former claim our particular attention; and shall be the leading subjects of this essay, and its accompanying plans.

Every one in the least acquainted with the concerns of a farm house and its homestead, must be sensible of the necessity of the master's eye, taking in, at one glance, all, or the most part, of the continual domestic transactions:—to that end, it is necessary, that the eye should be so placed, as to command *a general view* around.— Although this position be self-evident, yet if we survey the generality of farm houses, and examine the distribution of the rooms and the appendant offices, we shall find them, in many respects, very unaptly disposed and incommodiously placed:—nay, should we be led to consult the modern books of plans, published professedly on this subject, we shall find that those improprieties are not even there, as fully corrected, as might reasonably be expected.

The general and leading idea which I have taken as my guide, in the following plans, is this; the room which the master or mistress occupies, when not actively engaged in the affairs of the farm and the dairy, should be so placed, as to command a view of the transactions of the inferior domestics within doors; and also, that the windows of such room, should comprehend a view of the whole farm yard, and the buildings around it, in the most direct manner. To effect the latter purpose, it is necessary, that those out buildings be so disposed, as to *stand at right angles, or nearly so, with lines passing from the windows of the sitting room to those buildings.*

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* Vitruvius.

Thus, from their sitting room, may the master or mistress have a direct view into the barn, the stable, the oxstalls, the cow-house, the calf-house, the hog-stye, and the granary; and into, and through, the barns, waggon-houses, &c. By which means, the errors of servants and day labourers, may be observed and corrected before mischief ensues;—orders may be given with facility:—regularity and dispatch will then be the consequence.

Having thus briefly stated my idea, of the necessary arrangement of a farm house, and its appendages, I proceed to particular specifications, agreeable to such idea.

It is apprehended that, in the following designs, the *ground plans* alone will be sufficient for the purpose they are intended for: as from thence every one, who possesses the least architectural knowledge, will readily be enabled to lay on the chamber and garret floors:—and no variation of designs in these upper parts, will materially affect the estimate of expence.

The internal finishing must be understood to be plain and neat, with only a few embellishments of any kind.

From my acquaintance with the prices of buildings, in various parts of the kingdom, I am enabled to form my estimates on an *average* of those prices, where the materials are to be met with, at moderate expence and distance from the spot where they are to be used.

It would be highly unbecoming me to trifle with the time or attention of the Honourable Board, for whom the perusal of this tract is intended, in giving these estimates in the detail; yet, for their information, I would beg to remark, that I have calculated the expence of walls (according to their thickness) from *three* to *four shillings* per perch of fifteen feet; paving, with rough flags, at *three pence*, and with chiselled stone at *six pence* per foot;—beam and joisting at *twenty-eight shillings*, flooring at *twenty-three*, roof at *twenty-six*, and partitions at *ten shillings* a square:—plastering with laths at *ten pence*, and rendering at *six pence* a yard.—Thatching at *eleven shillings*, and tiling at *one pound ten shillings* a square.

Other estimates might have been made where different materials are used; but the materials here mentioned are such as may generally be met with throughout the kingdom, and are what are chiefly used in buildings of this nature.—Had it been thought necessary, separate estimates might also have been given of the *labour only*;

that the cost of the following buildings, might have been known, exclusive of the value of timber, &c. which frequently is found on the farm where buildings are required: but this would have led to unnecessary tautology.—I will, however, give some *proportions*, whereby the cost of labour, in either of the following buildings, might be found, viz. wall work of rough masonry, at about one-third of the foregoing charges;—flooring with rough flags at one half; ditto with chiselled work at one-fourth;—carpenters' work at one-third—plastering at one-third—thatching at one-third, and tiling at about one-fourth.

I have also taken the liberty of annexing another design, which, though it may not be strictly consonant to the general idea which led to the construction of the other plans, viz. the giving of a *direct* and *perpendicular* view from the common sitting room, into all the out-buildings of the homestead; yet, as variety is sometimes desirable, I thought it might not be improper, to form one plan on the periphery of an octagon:—and it is not improbable, that such an idea will be approved of by some individuals; especially as its compactness (to borrow a phrase from the ideal Doctor Primrose) gives it " an air of snugness."

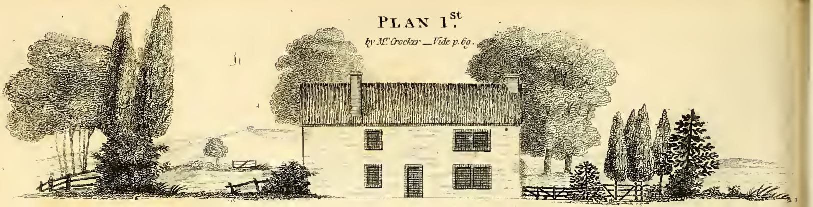
The exterior of the principal building, may be constructed on such fancy design as the elevation represents, or on such other as the reader's better taste may suggest; and the interior may be finished in a style, suitable to the rank in life of the proprietor of such farm, as the design is intended for.

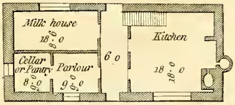
Buildings, of the dimensions here given, will be found sufficient, for the management of a mixed farm of £400. a year: the expence will probably amount to about £908.

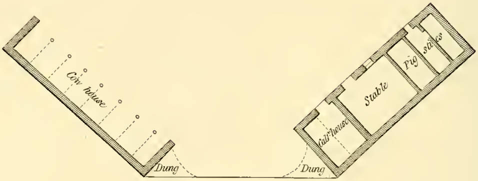
To conclude, I do not arrogate to myself any merit in this performance, further than such as fairly results, from having duly considered the subject in its various points of view; from giving a humble delineation of my ideas; and from an honest endeavour, to further the laudable and important exertions of the Board of Agriculture.

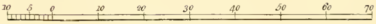
PLAN 1st.

by Mr. Crocker — Vide p. 69.









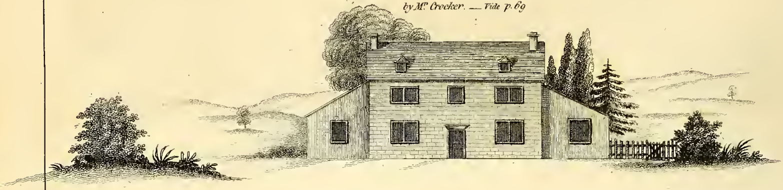
Scale of Feet.

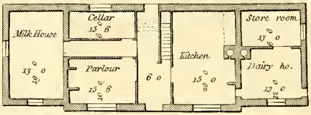
A. Crocker delt.

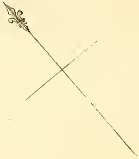
Neele s

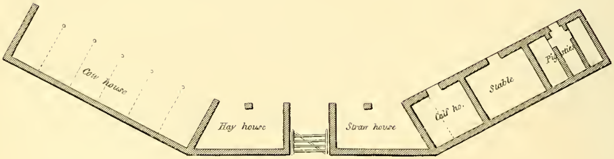
PLAN 2^d.

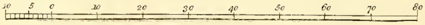
by M^r. Crocker. — Vide p. 69











Scale of Feet

A Crocker del^t.

Neele sculp^t. Strand.

Estimates of the Expence of building the Farm Houses as proposed by A. Crocker.

PLAN I.

Is intended for a dairy farm, from sixty to one hundred pounds per annum; the cost of which will be about £263; as appears by the following abstract of the estimated expence.

Dwelling House.

	£.	s.	d.
Mason, for walls, chimnies, floors, oven, furnace, &c.	58	10	0
Carpenter, for lintels, window frames, doors, beams, and joists, partitions, roof, stairs, &c.	92	17	0
Plasterer, for cieling, rendering, and plastering	16	3	0
Smith, for locks, hooks, and twists, latches, &c.	3	5	0
Glazier	10	6	0
Thatcher	8	13	0
Painter		12	0
	£190	6	0

Out Houses.

	£.	s.	d.
Mason, for walls of the cow-house, calf-house, stable, pig-stye, &c.	28	3	6
Do. for pitching or paving do.	8	5	0
Carpenter, for roofs to the cow-house, calf-house, stable, pig-styes, &c.	15	16	6
Do. for floors of hay-loft, doors, rack, and manger, &c.	12	18	6
Thatcher	7	10	0
Smith, for locks, &c.		16	6
Necessary house	1	15	0
	75	5	0
Total	£265	1	0

PLAN II.

Is intended for a dairy farm, from one hundred to two hundred pounds per annum; the cost of which will be about £357.

Dwelling House.

	£.	s.	d.
Mason, for walls, chimnies, floors, ovens, furnace, &c.	92	4	6
Carpenter, for lintels, window frames, doors, beams, and joists, partitions, roof, stairs, &c.	114	10	6
Plasterer, for ceiling, rendering, plastering, and tiling	53	11	0
Smith, for locks, hooks, and twists, &c.	3	10	0
Glazier	15	13	0
Painter		18	0
	£280	7	0

Out Houses.

	£.	s.	d.
Mason, for walls of the cow-house, calf-house, stable, &c.	31	15	6
Do. for pitching do.	8	5	0
Carpenter, for roofs to the cow-house, straw-house, hay-house, stable, calf-house, and pig-styes	17	12	6
Do. for floors of hay-loft, doors, calf-house, rack, &c.	10	18	6
Thatcher	6	13	0
Smith		11	0
Necessary house to be placed in the garden	1	15	0
	77	10	6
Total	£357	17	6

PLAN III.

Is intended for a corn farm, from 100 to £200. per annum; the cost of which will be about £569.

Dwelling House.

	£.	s.	d
Mason, for walls, chimnies, floors, oven, furnace, &c.	94	11	0
Carpenter, for lintels, window frames, doors, beams, and joists, partitions, roof, stairs, &c.	125	3	3
Plasterer, for ceiling, rendering, and plastering	25	11	8
Tiler	35	10	0
Smith	2	18	0
Glazier	14	14	0
Painter		18	0
	299	6	7

Out Houses.

	£.	s.	d.
Mason, for walls of the cyder-house, ox stalls, barns, stable, waggon-house, and granary, and for pitching	80	7	0
Carpenter, for roofs, &c.	66	12	3
Do. for floors, of do. and for rack, manger, windows, &c.	79	16	0
Thatcher	25	0	6
Tiler	11	5	0
Ceiling the granary	1	13	4
Smith	3	3	0
Necessary house	2	10	0
	270	7	1
Total	£569	13	8

PLAN IV.

Is intended for a corn farm, from two hundred to three hundred pounds per annum; the cost of which will be about £737.

Dwelling House.

	£.	s.	d.
Mason, for walls, chimnies, floors, oven, &c.	139	5	4
Carpenter, for lintels, window frames, doors, beams, and joists, partitions, stairs, &c.	154	4	8
Smith, for hooks, &c. &c.	4	12	0
Plasterer and tiler	84	7	2
Glazier	19	9	0
Painter	1	15	0
	£403	13	2

Out Houses.

	£.	s.	d.
Mason, for walls of pig-styes, straw-house, stables, barn, waggon-houses, granary, and for pitching	107	15	0
Carpenter, for roofs	87	7	0
Do. for floors of granary, hay-loft, barns, and for rack, manger, &c.	85	2	6
Thatcher	40	14	0
Tiler, for the granary and for ceiling it	6	13	6
Smith, for locks, &c.	3	7	0
Necessary house	2	12	6
	333	11	6
Total	£737	4	8

PLAN V.

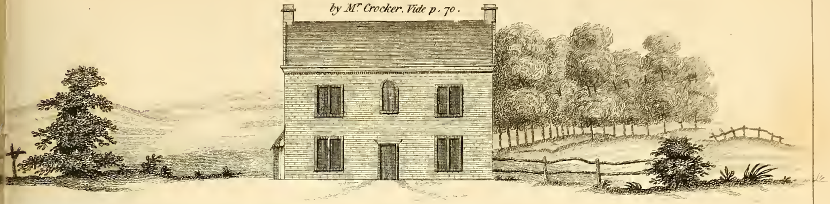
Is intended for a corn and dairy farm, from 200 to £300. per annum; the cost of which will be about £595.

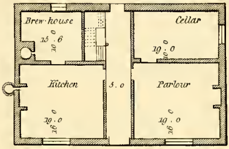
Dwelling House.

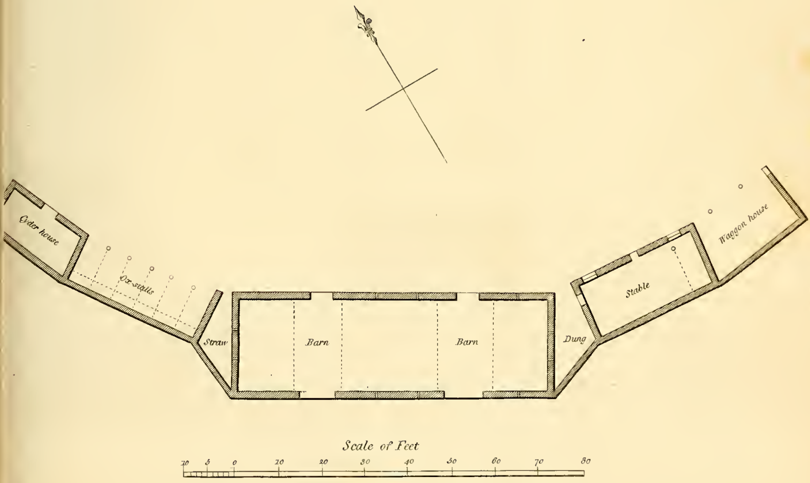
	£.	s.	d.
Mason, for walls, chimnies, floors, oven, &c.	147	7	0
Carpenter, for lintels, window frames, doors, beam, and joists, partitions, stairs, roof, &c.	142	19	6
Plasterer, for rendering, plastering, &c.	44	6	0
Smith, for locks, &c.	5	10	0
Thatcher	16	10	0
Glazier	21	6	0
Painter	2	0	0
	£379	18	6

PLAN 3^{d}.

by M^{r}. Crocker. Vide p. 70.







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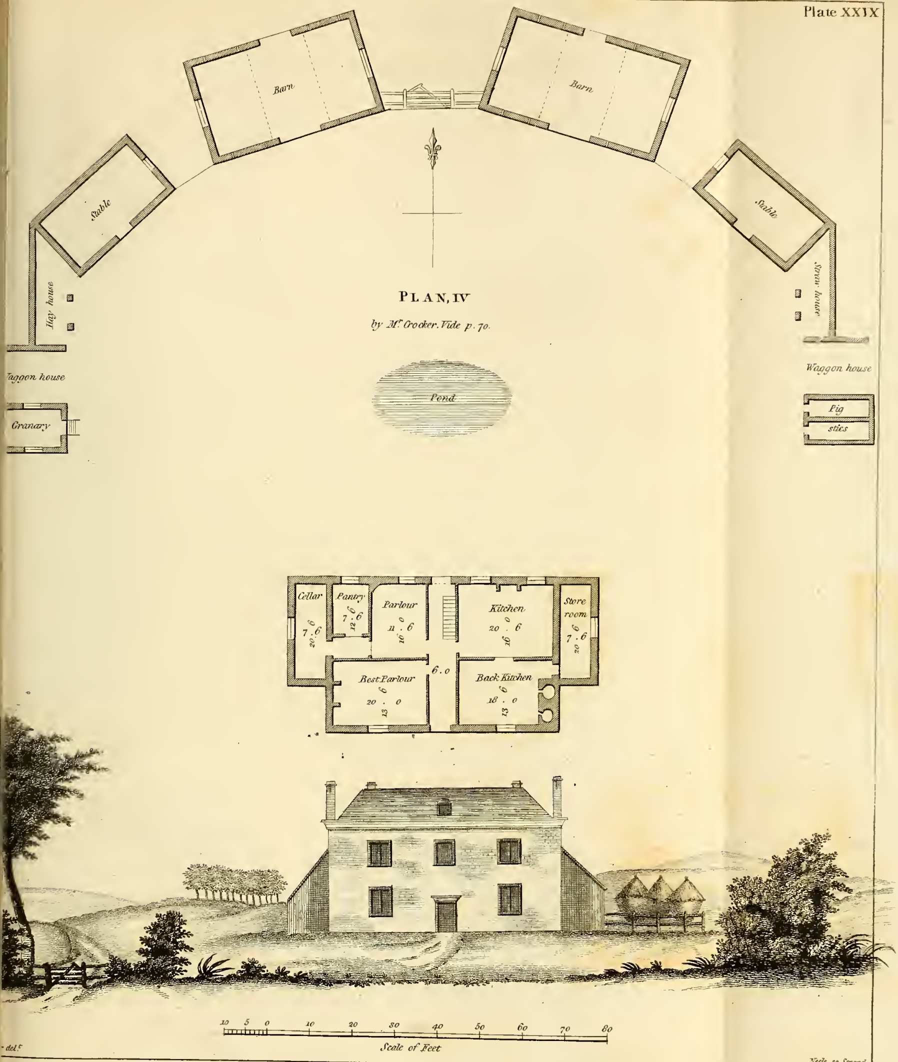
Neele sculp^{t}. 352 Strand.

Plate XXIX

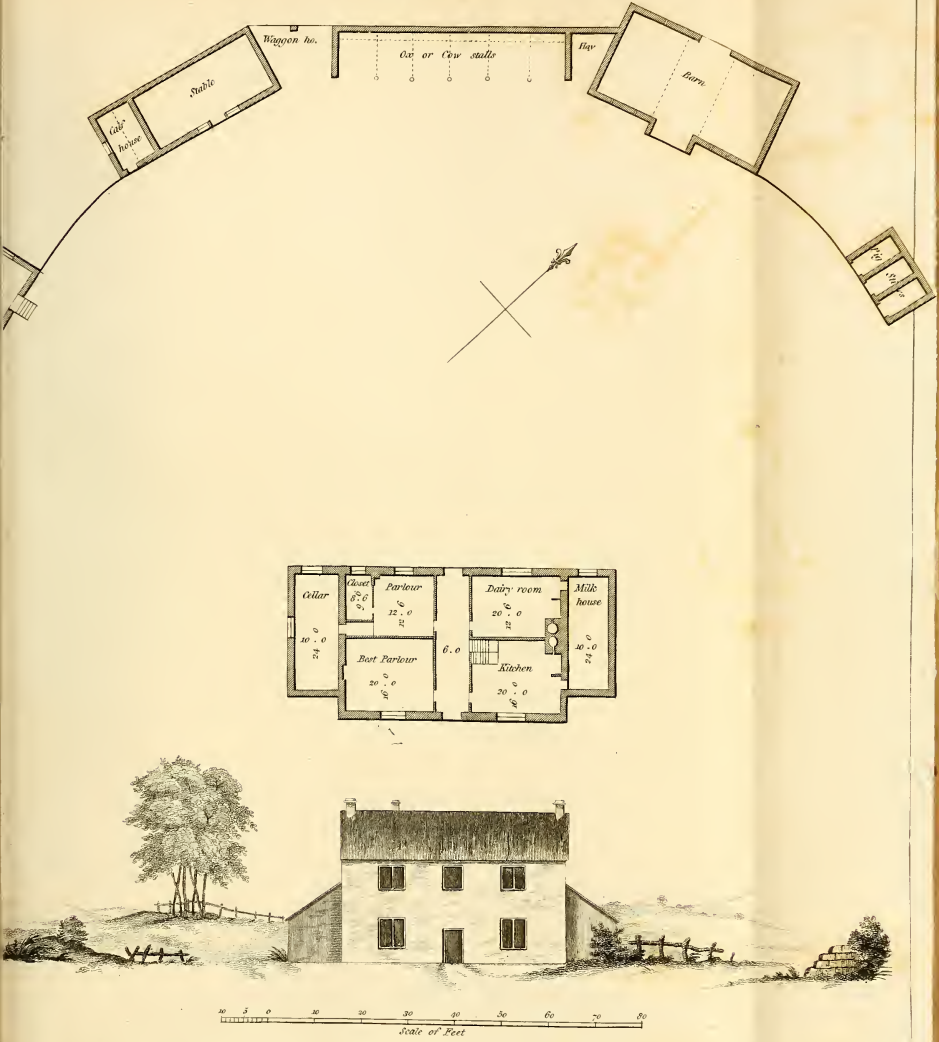
PLAN, IV

by Mr. Crocker. Vide p. 70.



PLAN 5th

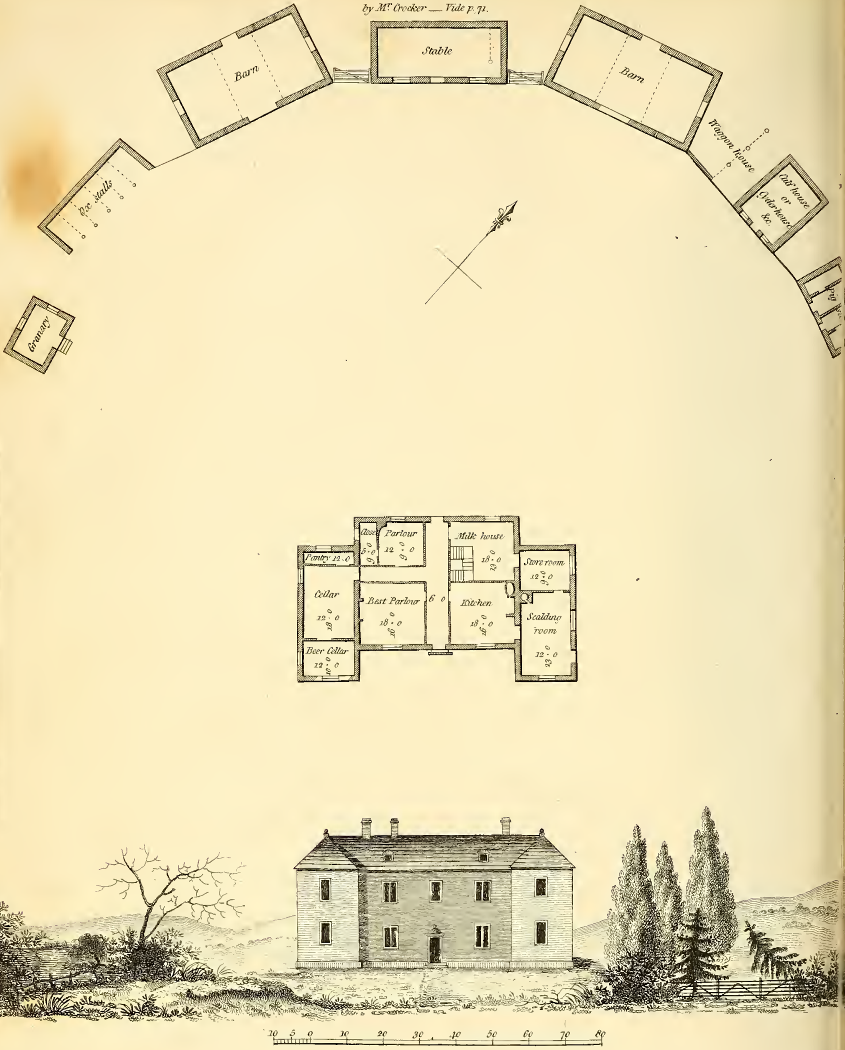
by Mr. Crocker. Vide p. 70.



Neele sc. 352 Strand.

PLAN 6^th.

by M^r. Crocker — Vide p. 71.



Scale of Feet.

A. Crocker del^t.

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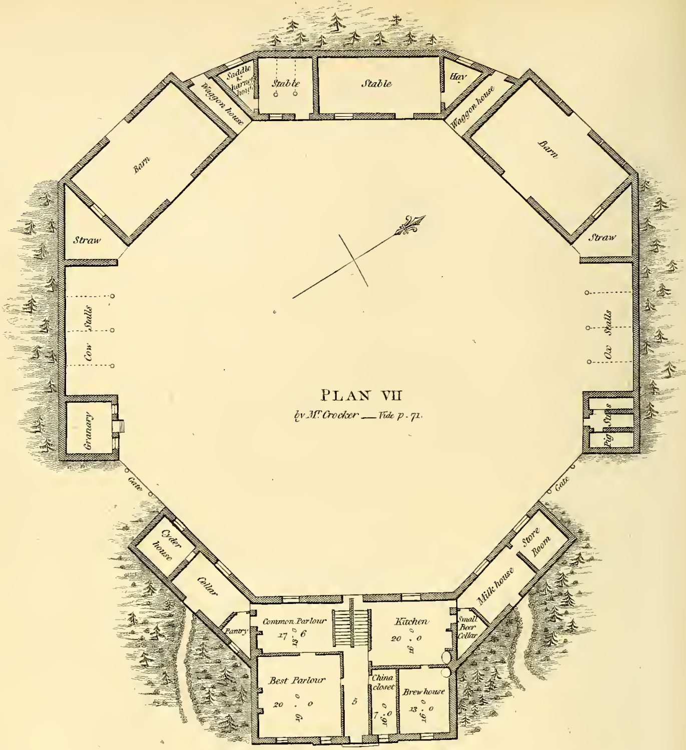
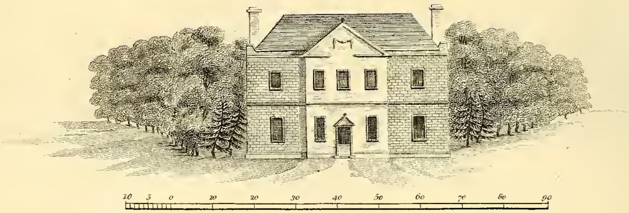


PLAN VII

by Mr. Crocker — Vide p. 71.



A. Crocker del.

Neele sc. 352

Out Houses.

	£.	s.	d.
Mason, for walls to the granary, calf-house, stable, ox stalls, pig-styes, and for pitching	71	12	0
Carpenter, for roofs to granary, calf-house, stable, waggon-house, ox stalls, barns, pig-styes, &c. and for floors to granary, barns, &c. &c.	102	17	0
Thatching, tiling, and cieling the granary	33	12	6
Locks, &c.	3	8	0
Necessary house	3	13	6
	215	3	0
Total	£595	1	6

PLAN VI.

Is intended for a corn and dairy farm, from 300 to £400. per annum; the cost of which will be about £766.

Dwelling House.

	£.	s.	d.
Mason, for walls, chimnies, floors, oven, &c.	143	11	0
Carpenter, for lintels, window frames, beams and joists, partitions, stairs, roof, &c.	172	5	0
Plasterer, for rendering, plastering, and cieling do.	69	5	0
Smith	6	0	0
Glazier	26	0	0
Tiler	63	0	0
Painter	2	10	0
	£482	11	0

Out Houses.

	£.	s.	d.
Mason, for wall of granary, cow-house, barns, stables, cyder-house, and pig-styes, and for pitching	123	9	6
Carpenter, for roofs of granary, cow-house, barns, stables, waggon-houses, cyder-house, &c. and for floors of granary, barn, and hay-loft, corn binns, &c. &c.	122	0	6
Thatcher	24	4	0
Tiling and ceiling the granary	6	16	0
Smith	3	8	0
Necessary house	3	19	0
	283	17	0
Total	£766	8	0

PLAN VII.

Dwelling House.

	£.	s.	d.
Mason	169	16	0
Carpenter	199	18	0
Plasterer	71	10	0
Smith	7	4	0
Tiler	70	0	0
Glazier	28	5	4
Painter	5	4	0
	£551	17	4

Out Buildings.

	£.	s.	d.
Mason	143	4	0
Carpenter	164	4	6
Thatcher	30	18	0
Tiler	7	0	0
Smith	3	14	6
For a water closet	7	15	0
	356	16	0
	£908	13	4

Frome,
12 *May*, 1796.

IV. *Account of the Corn Stands at Woburn Abbey. By Sir* John Sinclair.

AMONG the various agricultural improvements, which I had the satisfaction of seeing, either carrying on, or completed, in the course of an excursion to Woburn Abbey, there was one, which, on various accounts, I must take the liberty of recommending to the attention of the Board; namely, the corn stands, or walled rick-stands, an engraving of which is annexed. It is well known, that grain in the straw, keeps infinitely better in the open air, than in close barns, that it is less apt to be destroyed by vermin, and that it saves the enormous expence which the building of great barns necessarily occasions.*

No doubt, therefore, can be entertained, respecting the great public advantage to be derived, from attention to this article.

These stands, I am informed, have been for some time in use by the late Mr. Bakewell and in his neighbourhood. They were only erected at Woburn Abbey about two years ago. Ricks, in the form of a parallelogram, of any size, may be constructed on this plan; but for small ricks or cocks, the best form of the stand is octagonal, because the wooden coping may be cut from smaller timber, and with less waste, than the circular ones; and a circular cock is as easily built on an octagonal, as on a circular, stand. The expence of erecting these stands, is but little more than that of good timber frames, on the common construction, especially if they have stone posts and caps; and there is every reason to believe, that the wall-stands must be much more durable. As the foundations are sunk some depth into the earth, and the coping projects some distance, vermin cannot get into these ricks, except by carelessness in letting things lie or accumulate against the walls, or allowing the corn to hang loose downwards over the walls, while, or after the rick is building. Where stone is to be had, it certainly would be an improvement to employ that material,

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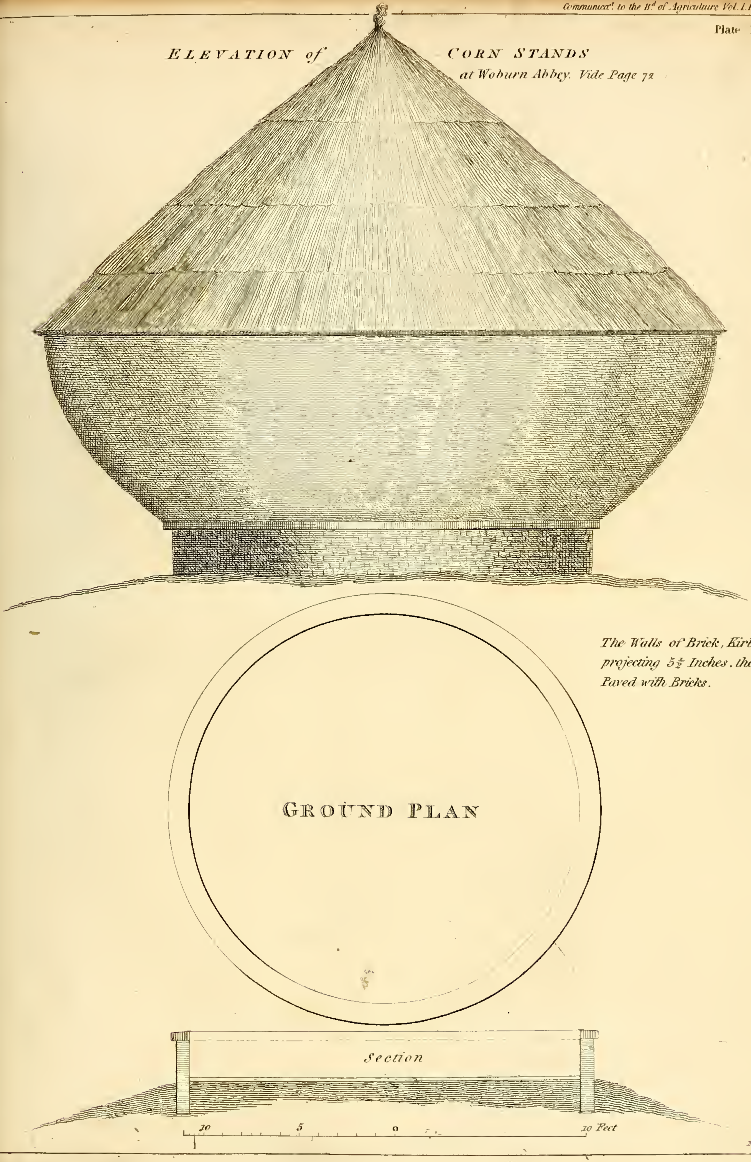
* If there are, as it is said, 20,000, or even 10,000, large barns in the kingdom, which must cost at an average £200. each, and if grain to the amount of £10. or even £5. is destroyed in each barn, the total expence and loss to the public, must be very considerable indeed. The expence of the erecting such a stand as in the annexed plate, is about £16. 9*s*. reckoning the bricks to cost on the spot, 31*s*. 6*d*. per thousand, lime 9*d*. per bushel, and oak timber 2*s*. per foot in the tree.

Plate XXXIII

ELEVATION of CORN STANDS

at Woburn Abbey. Vide Page 72



The Walls of Brick, Kirb of Oak projecting 5½ Inches. the Bottom Paved with Bricks.

Neele sculp. Strand.

both for the walls and the coping. If it is apprehended, that any vermin can come through the bottom of the stand, slate might be made use of, through which, from its peculiar texture, they cannot penetrate.

It would be injustice to the noble Duke, at whose farm I observed these stands, not to take this opportunity of stating, that a variety of agricultural experiments, and improvements of various sorts, are carrying on at Woburn, under his immediate direction, not only with much zeal, but also with a degree of judgment, rarely to be equalled; the result of which, as soon as they are perfected, will, I hope, be brought under the consideration of the Board; and afterwards, through the medium of some of its printed papers, communicated to the public.*

---

* Some recommend the *Dutch barns,* as they are called, for grain as well as hay; and the posts certainly enable the stacks to be built very regularly, and any quantity wanted, may be taken in at a time, from the convenient form of the cover, without any risk of injury to the remainder. But corn stands, like those at Woburn, may be made of any size, in proportion to the thrashing barn, and a tarpawling, which no farmer should want, will be a sufficient protection to any part of a stack, which, by any sudden change of weather, could not be taken in.

COMMUNICATIONS

TO THE

BOARD OF AGRICULTURE.

ON

COTTAGES.

PART II.

COTTAGES.

V. *Letter from the Earl of* Winchilsea, *to the President of the Board of Agriculture, on the Advantages of Cottagers renting Land.*[*]

SIR, South-Street, January 4, 1796.

AT your request, I made what inquiries I could, during the short time I was in the country, as to the situation of labourers renting small quantities of land; and am more and more confirmed in the opinion I have long had, that nothing is so beneficial, both to them and to the land-owners, as their having land to be occupied either for the keeping of cows, or as gardens, according to circumstances.

By means of these advantages, the labourers and their families live better, and are consequently more fit to endure labour; it makes them more contented and more attached to their situation, and it gives them a sort of independence, which makes them set a higher value upon their character. In the neighbourhood in which I live, men so circumstanced, are almost always considered as the most to be depended upon and trusted: the possessing a little property certainly gives a spur to industry; as a proof of this, it has almost always happened to me, that when a labourer has obtained a cow, and land sufficient to maintain her, the first thing he has thought of, has been, how he could save money enough to buy another; and I have almost always had applications for more land from those people so circumstanced. There are several labourers in my neighbourhood, who have got on in that manner, till they now keep two, three, and some four cows, and yet are amongst the hardest working men in the country, and the best labourers. I believe there are from seventy to eighty labourers upon my estate in Rutland, who keep from one to four cows each; and I have always heard that they are hard working industrious men; they manage their land well, and always pay their rent.

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[*] This very valuable paper was drawn up at the request of the President of the Board of Agriculture, in consequence of a conversation which passed at the Farmers' Club; when the Earl of Winchilsea stated that the custom of letting small portions of land to labourers, which prevailed in parts of Rutlandshire, was found to be of great general utility. Sir John Sinclair then desired that Lord Winchilsea would inform him of all the particulars he was acquainted with, respecting that custom; which being read at the Board of Agriculture, and much approved of, was ordered to be printed. The following interesting communications, also, from Lord Brownlow, from Robert Barclay, Esq. M. P. and from Mr. Crutchley, of Burleigh, originated in the same circumstance.

With regard to the profit they make of a cow, I am informed that those who manage well, will clear about twenty-pence a week, or £4. 6*s*. 8*d*. per ann. by each cow, supposing the rent of the land, levies, expences of hay-making, &c. to cost them £4. exclusive of house rent; this is calculated, supposing all the produce sold; but whether this is too low, or how it is, I cannot say; but certainly those who have a cow, appear to be (in comparison with those who have none) much more than twenty-pence per week richer: it may be owing to the superior industry of those families. I must observe, that they keep sheep during the winter upon their cow pasture, at the rate of two, and in some cases three, at 2*s*. 6*d*. each for each cow pasture. This is included in the above estimate of profit: the skim-milk is also valued. Some of them, where the land is not good, do not pay so much. I put down £4. supposing the land tolerably good, and it is certainly more advantageous to them to occupy good land at a high rent, than poor land at a low one. They all agree, that two cows are more than twice as profitable as one, particularly where the suckling of calves is the system pursued. The generality of the people near me suckle calves; some make butter, and a few make cheese; some buy the supernumerary lambs of the farmers, and rear them by hand; and where they have more than one or two cow-gaits, stock with sheep at the rate, in summer, of three for a cow-gait. Those who have families, and one cow, generally make butter, for the sake of having skim-milk for their children, which is an article rarely to be obtained by the poor. When a labourer has the offer of a cow-gait, and land for winter provision, and has not money enough to purchase a cow, he generally applies to his employer, who will in all probability advance him some money; and the inhabitants of the parish, if the man has a good character, frequently subscribe to set him up, from charitable motives, and from a persuasion that by this means his family will never want relief from the parish: and this is so much the case, that when a labourer dies, and his son takes his land and stock, he in some cases maintains the widow. I know of several instances of labourers' widows who are past work, who are maintained by their sons, who could not otherwise have lived without parish relief. In a village near me, where there are a great number of labourers who keep cows, the poor's rate is not at this time above six-pence in the pound: the number of inhabitants 335.

When a poor man's cow dies, it is certainly a great distress, and sometimes the owner is obliged to ask assistance to replace her, and somehow or other they always contrive to get one, as I scarcely ever knew a cow-gait given up for want of ability to obtain a cow, except in the case of old and infirm women, who are left without children: they (unless they have some assistance from the parish), cannot live upon the profits of a cow, nor can they manage it properly. Should a case of this sort occur, the parish officers would act very unwisely in refusing assistance, as a very trifling allowance, together with the cow, would enable a woman to live; whereas, by refusing any assistance, they oblige the woman to part with her cow, and then she must have her whole subsistence from them. I applied to Mr. Barker of Lyndon, Rutland, for some information, with regard to the antiquity of the custom in that county, of letting cow-gaits to labourers, and received the following letter from him.

MY LORD, Lyndon, January 14, 1796.

I have considered your Lordship's question as to the labourers keeping cows, and think it is certainly a very useful thing for them to do so; most of the poor people of this parish do keep cows, one, or two, or three to a family, and a great advantage it is to them; so that we can hardly say there are any industrious persons here who are really poor, as they are in some places where they have not that advantage. It has been the practice in this place time out of mind. We have a ground called the Cottagers' Close, wherein the poor, for an easy rent, keep eighteen cows, and, I suppose, it was laid out for them at the inclosure of the lordship in 1624.

On that close the cows go from Mayday till St. Andrew's, and in winter they take them into their homesteads; and while several neighbouring lordships were open-field, they could buy hay reasonably to feed them with at that season; and we have several little takes of a few pounds a year, rented by the cottagers; and I have made some new ones; for since the inclosure of those parishes, hay is grown very dear, and is scarcely to be had at all.

I believe it always was the custom for every one to keep a milch cow, who could raise money enough to buy one, and could get keeping for it. I imagine it was so in this parish long before it was inclosed.—I think there are cottagers who have a right of a common in Hambledon cow-pasture; but your Lordship must know that matter much better than I do. There are little estates and cottagers who have a right of common in North Luffenham cow-pasture. There were persons at Edith Weston who had such before the inclosure, and I believe it was the same in other towns also; but I am sorry to say, that I am afraid most of those cottages were taken away at the time of the several inclosures, and the land thrown to the farms; wherein I think they did very wrong: but we have an instance of a new inclosure, where that good old custom is still retained; for Sir John Rushout has made a considerable number at Ketton. I believe the cow-pasture and ploughing land to each cottage is four acres. I wish, and I have often said so, that parliament would make it a rule never to grant an inclosure, without a close laid out for the benefit of the poor. I am, &c. THOMAS BARKER.

I can add to this, that upon my own estate, the custom is, I believe, of the greatest antiquity: I have labourers, tenants, in whose families the lands they now occupy have been for near two hundred years; and they have, as far as I can learn, been generally good labourers, and received no relief from the parish. I have made several new takes of that sort, and have always found them to answer.

With regard to manuring their meadow ground; by keeping their cows in hovel during winter, and by keeping a pig or two, which they generally do, they contrive to make manure; their employer generally sells to them, or gives them, a small quantity of straw, and sometimes they procure fern, or collect weeds.

The situation of labourers may, I think, be classed as follows:

1st. Those who have a sufficient quantity of grass inclosed land to enable them to keep one or more cows winter and summer, and a garden near their house.

This is, in my opinion, the best situation for a labourer, as, except the hay-making, the rest of the business is done by his wife, and his labour is not interrupted. Where a grass field is allotted to a certain number, and each have a field for mowing near their house; or where there are two fields, one grazed, and one mown alternately, and properly stinted, it will be as advantageous, or nearly so, as having small inclosures to themselves.

This can only take place in countries where there is an abundance of grass-land.

2dly. Those who have a summer pasture for their cow, and some arable land, upon which they grow the winter provision.

This is not so advantageous as No. 1. because more of their time is taken up by the arable land; however, as they must, in order to make any hay, have part of the land sown with grass, the labour is not so much as to be hurtful to them. I have several such upon my estate, which answer very well. This is adapted to countries where there is a mixture of pasture and arable.

3dly. Those who have a right of common for the summer-keep of the cow, and a meadow, or arable ground, or a meadow in common, for the winter provision.

This would be like the two former, were it not that nine commons out of ten are so much overstocked, that the summer-keep is very bad. This is a very great loss, and if the meadow is in common, it is another disadvantage. It is certain that upon an inclosure, if the owners choose it, the labourers who keep cows may be placed in a much better situation than they were, inasmuch as inclosed land is more valuable to occupiers of every description, than commons and open fields. Garden ground may also be allotted to them, and others, which cannot be done while the land remains uninclosed. I am persuaded, that where these things are attended to, very few objections to an inclosure will arise on the part of the labourers, and that the land owners will have the satisfaction of benefiting the poor, and at the same time of making their own property more valuable, by adopting what, in all probability, will be the means of keeping down the poor's rate.

I suppose gardens near the houses to all these; should not that be the case, as they have land, they may raise garden-stuff; but if their land is at a distance from their houses, it is not so advantageous: and if their take is all grass, they can find no ground to dig, except, perhaps, where a haystack has been placed the preceding year.

4th. Those who have a right of common and a garden.

This is certainly very beneficial to them: geese and pigs may be kept upon the common; and the latter fed with the produce of the garden, and a small quantity of purchased food.

5th. Those who have a right of common, and no garden.

This, unless fuel is obtained, is of no great value to them; if fuel is obtained, it is of great value, and the loss of it difficult to be made up to them.

6th. Those who have several acres of arable land, and no summer pasturage for a cow.

This is, I believe, of no sort of use to the labourer; for though he may cultivate part of the land as a garden, the continued labour it would require to stall-feed a cow winter and summer, and the quantity of the land he must till, would occupy so much of his time, that the take would, upon the whole, be injurious to him, even supposing the land inclosed, and contiguous to his house: if at a distance, or not inclosed, the disadvantage would be still greater. I am sorry to differ in opinion upon this subject from Mr. Barclay;* but perhaps in other parts of the island, his plan of a take entirely arable might answer. I am persuaded it would not in the parts I am acquainted with, and that the farmers would not sell them hay, which is a part of his plan. I believe that a summer pasture for the cows is absolutely necessary, to make it of advantage to the labourers who keep them.

7th. Those who have a garden near their house.

This is the best thing that can be done for labourers in arable countries, and where there are other reasons which prevent them from keeping cows.†

8th. Those who have no land whatever.

This is a very bad situation for a labourer to be placed in, both for his comfort, and for the education of his children. When a labourer is possessed of cattle, his children are taught early in life the necessity of taking care of them, and acquire some knowledge of their treatment; and if he has a garden, they learn to dig and weed, and their time is employed in useful industry; by which means they are more likely to acquire honest and industrious habits, than those who are bred up in the poverty and laziness we too often see; for I believe it is a certain fact, that extreme poverty begets idleness.

For these reasons, I am clearly of opinion, that the letting land to labourers is of great utility both to them, to the land owners, and to the community; for though in every village some idle people will be found, who are not fit to be entrusted with, or capable of receiving benefit from land, still the greater number will, and it may have the effect of making those industrious who would not otherwise have been so. When circumstances will admit of it, their having land enough to enable them to keep cows is the most desirable thing for them; but a very great part of the island will not, in my opinion, allow of that system's being pursued. Where there is hardly any thing but arable land, and also in the neighbourhood of large towns, the value of grass-land is too great to allow of labourers renting it with advantage; a garden may, however, be allotted to them in almost every situation, and will be found of infinite use to them. In countries where it has never been the custom for labourers to keep cows, it would be very difficult to introduce it; but where no gardens have been annexed to the cottages, it is sufficient to give the ground, and the labourer is sure to know what to do with it, and will reap an immediate benefit from it. Of this I have had experience in several places, particularly in two parishes near Newport Pagnell, Bucks, where there never had been any gardens annexed to the labourers' houses, and where, upon land being allotted to them, they all, without a single exception, cultivated their gardens extremely well, and profess receiving the greatest benefit from them. I beg to observe, that when I mention cow pastures, I always suppose there to be a sufficiency of land to enable the cow to be kept tolerably well both in summer and winter; if that is not the case, I believe that the cow is but of little benefit to the owner; and when I mention gardens, I always mean large gardens, from half a rood to a rood, or more, if the land is poor.—Those very small spots of a few square yards, which we sometimes see near cottages, I can hardly call gardens: I think there should be as much as will produce all the garden-stuff the family consumes, and enough for a pig, with the addition of a little meal. I think they ought to pay the same rent that a farmer would pay for the land, and no more. I am persuaded that it frequently happens that a labourer lives in a house at twenty or thirty shillings a year rent, which he is unable to pay; to which, if a garden of a rood was added, for which he would have to pay five or ten shillings a year more, that he would be enabled, by the profit he would derive from the garden, to pay the rent of the house, &c. with great advantage to himself.

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* See No. VII. p. 91, where Mr. Barclay's opinion is stated.

† As land cultivated as a garden will produce a greater quantity of food for man than in any other way, and as four-fifths of the labour bestowed upon their gardens will be done by the labourers at extra hours, and when they and their children would otherwise be unemployed, it may not be too much to say, that 100,000 acres allotted to cottagers as garden ground, will give a produce equal to what 150,000 acres cultivated in the ordinary way would give, and that without occupying more of the time they would otherwise give to the farmers who employ them, than the cultivation of 20,000 acres would require.

As I before mentioned, some difficulties may occur in establishing the custom of labourers keeping cows in those parts of the country where no such custom has existed; wherever it has or does exist, it ought by all means to be encouraged, and not suffered to fall into disuse, as has been the case to a great degree in the midland counties, one of the causes of which I apprehend to be, the dislike the generality of farmers have to seeing the labourers rent any land. Perhaps one of their reasons for disliking this is, that the land, if not occupied by the labourers, would fall to their own share; and another, I am afraid, is, that they rather wish to have the labourers more dependent upon them, for which reasons they are always desirous of hiring the house and land occupied by a labourer, under pretence, that by that means the landlord will be secure of his rent, and that they will keep the house in repair. This the agents of estates are too apt to give into, as they find it much less trouble to meet six than sixty tenants at a rent-day, and by this means avoid the being somctimes obliged to hear the wants and complaints of the poor: all parties, therefore, join in persuading the landlord, who, it is natural to suppose (unless he has time and inclination to investigate the matter very closely), will agree to this their plan, from the manner in which it comes rccommended to him; and it is in this manner that the labourers have been dispossessed of their cow pastures in various parts of the midland counties. The moment the farmer obtains his wish, he takes every particle of the land to himself, and relets the house to the labourer, who by this means is rendered miserable, the poor's rate increased, the value of the estate to the land-owner diminished, and the house suffered to go to decay; which, when once fallen, the tenant will never rebuild, but the landlord must, at a considerable expence. Whoever travels through the midland counties, and will take the trouble of inquiring, will generally receive for answer, that formerly there were a great many cottagers who kept cows, but that the land is now thrown to the farmers; and if he inquires still further, he will find, that in those parishes the poor's rates have increased in an amazing degree, more than according to the average rise throughout England. It is to be hoped, that as the quantity of land required for gardens is very small, it will not excite the jealousy of the farmers.

I must, however, say, that I do by no means allude to all farmers, or all agents of estates; for I can with truth say, that I know a great many farmers who are convinced of the utility of letting land to labourers, and who have voluntarily given up land to be applied to that purpose, notwithstanding they had leases; and I also have the pleasure of being acquainted with agents of estates, who have the most proper and liberal ideas upon these subjects. I cannot conclude without expressing my hearty wish for the success of the General Inclosure Bill which you are now framing, particularly as I know that it is your wish and intention carefully to guard the rights of the cottager, and to consult the interest of the labourer. By the attention of the legislature, a great deal may be done; but still an infinite deal more must depend upon the proprietors of estates. I therefore hope that some more able advocate than I am, will plead the cause of the labourers, that all the land owners in the island may be convinced of the necessity of attending to the comfort and happiness of those most useful members of society. I have the honour to be, Sir,

Your most obedient and humble servant,
WINCHILSEA.

Sir John Sinclair, Bart.
&c. &c. &c.

VI. *Queries concerning Cottages. With the Answers; by Lord* Brownlow.

Sir,

To the queries concerning cottages, which I had the honour to receive from you, I would sooner have returned an answer, if I had gone into the country during the recess at Christmas; but, as I continued in town, I was obliged to correspond upon this subject, together with many other matters, with my steward in the country.

In the parish of Belton, there has been, for a great length of time, a cottager's pasture, consisting of 159 acres, about half of which is covered with gorse; and the tenants of almost all the small houses have a right, for each house, to turn on this common, for the whole year, except from Ladyday to Mayday (during which time the common is to be free from stock), two horses, or four cows, or sixteen barren sheep, or twelve ewes and their lambs. No bullock or steer to be turned on except between Martinmas and Ladyday. A mare and foal equal to three cows, the foals and also the lambs to be taken off the 15th of August. Thirteen out of the twenty-five cottagers stock the common themselves, but the other twelve let their rights to the farmers, who are very ready to hire them at a price equal at least to what they pay for house and commons. The cottagers have a right to cut an equal share of gorse, as marked out by a person agreed upon for that purpose by the whole number. For the house, which mostly contains an oven, and to which there is always a piece for a garden, and a pig-sty, together with this right of common, the rent paid is thirty-five shillings per annum, I doing all repairs but glass windows; this is the same rent as has been paid for more than a hundred years; except that I have added five shillings per annum for the repairs of thatch, &c. which the cottagers used to do; for without so doing I perceived my cottages would come to ruin. But when I say the rent is the old one, I must also state, that I have added several cottages to the old number, who share equally in the common. The cottagers in the parish of Belton have, besides this pasture, a power of adjisting their cows in the park there, at eighteen shillings per head from old Mayday to new Michaelmas day: and many of them have a close of three or four acres at the least, for cutting hay; but no cottager has any ploughed land whatever.

On all my estates in Lincolnshire I have found a number of small tenants and of cottagers; and well knowing and esteeming the following rule of my father's "*rather build two cottages than suffer one to be annihilated*;" in new inclosures I have provided for all the little tenants, either by two cottagers' pastures, one for hay, the other for pasture alternately (as in the case of Welton about five miles north of Lincoln) or else have allotted them a close to the cottage. My present steward contrasts these different methods in the following words, "In cottage pastures, as at Welton, there is no power for the good manager to make the most of his land, the fences become neglected, and the land badly drained; many of the cottagers must lie at a distance from the pasture, they thereby use a great deal of time in foddering and milking, which would be valuable both to the farmers and themselves, especially in hay and corn harvest: whereas if each cottager has a close contiguously allotted to him, or even shares one with his neighbour, he contrives to raise a few lambs, and makes a profit that way as well as from his cow." I am a great advocate for grass-land, with a comfortable house to a cottager, as the labourer then becomes attached to the spot, and interested in the peace and welfare of the country; but to let plough land to a cottager, I think wrong; because the land is ill managed, they must hire their ploughing, and it takes up so much of their time, that they will not go to labourer's work at the times the farmers most want them; being, as I have often heard them say, better employed about their own business, which if they neglected, they lost more than their earnings as labourers.

To the mode of letting small closes with cottages there seems, however, two objections, first the loss of land, and the expence from so many division fences; this may be made amends for to the land owner, if not by rent, at least by the satisfaction of giving more happiness both in degree and number, than he could give any other way; the second objection which occurs is the decay of the pasture for want of tillage in a course of years; but that perhaps may be obviated by having a small close or two more than the number of cottages, so that in succession each cottager may have his close in tillage, for a meliorating course of crops, during which time he would hold the spare close also for the support of his cow.

A tenant of mine in Lincolnshire, who has distinguished himself by his industry and good management, has another mode of providing for cottagers, upon an estate of which he is the steward; and that is, by requiring the farmers to keep a cow the year round for each of the cottagers, for three pounds: and in the cottages which he has built on that estate, he has contrived to give between every two, a power of fixing a copper for brewing, &c.

The following are the best answers I am able to give to your several queries in their order.

QUERIES.	ANSWERS.
No. 1. What is the rent of the cottage merely?	No. 1. The rent of the cottage merely, is from 1*l.* 10*s.* to 2*l.*
2. To whom are they let?	2. In many parishes the cottages are very generally let to under tenants by the farmers; but this is a practice universally rejected on my estates.
3. What is the quantity of land allowed for a garden?	3. A garden should not be less than a rood, exclusive of the pig-yard.
4. What is the rent of a cottage with such garden?	4. Rent of cottage with such a garden 2*l.* 10*s.*
5. What the most profitable culture of it?	5. By manuring for potatoes, after which crop, beans, peas, &c. will follow well.
6. What quantity of land is, at an average, allowed for a cow?	6. Two acres and a half of land will be sufficient.
7. At what rent per acre?	7. Value about 15*s.* per acre.
8. Which is found the best system to t each cottager; a separate field, or a number of them a large field for summer grass, and another for hay?	8. Answered by what has been said in the previous statement.
9. What quantity of hay per cow, do they require for winter?	9. Two ton or two ton and a half, is sufficient for winter keep of one cow.
10. How do the cottagers manure their land for hay?	10. By the manure from the pig-yard, &c. or if the cow be housed (which is the best method) by the manure from thence.
11. What other profit, from sheep, or otherwise, do they derive from the land?	11. They do derive a profit from keeping lambs from the time of their falling to Michaelmas, or later, when they are sold at the fairs.
12. Do they raise any artificial grasses?	12. Cottagers in some open fields raise clover.
13. Will this system do for tillage? In what cases would it do, and how is the land to be ploughed?	13. The system of cottagers does not do well for tillage, for the reasons in the previous statement.
14. Is a large garden as profitable to a cottager as a cow pasture?	14. A large garden cannot be as profitable to a cottager as a cow pasture. In the first place he cannot maintain a cow from it: in the next, he cannot cultivate it without giving to it a great deal of his time, and more manure

	than he can furnish of his own; for both which he would be ill repaid by the produce, over and above the consumption of his family. But without some garden, it must be difficult for a cottager to support himself and family; the size of it should be proportioned to the assistance he may get from his family, in addition to his own spare time of cultivating it.
15. When cottagers rent land, and keep a cow, has it the effect of raising or lowering the rate of wages?	15. It is thought not to raise the price of wages; by encouraging population it increases the number of hands, and a cottager who has such ties to the spot, can and will work for less wages than a labourer can, who has nothing but his wages for his support.
16. What are the effects of the system, to the cottager, the parish, and the public?	16. To the cottager it affords the comforts of life; to the parish it lowers the poor's rates; a man who keeps a cow has seldom been known to be troublesome to a parish; and to the public it gives an increase of hands, from infancy taught to work by their parents for their advantage.
17. What is found to be the best term,—life, lives, years, or at will?	17. The best term seems to be from year to year at will. If cottagers are upon lease for years or lives, they will be induced, by a small advantage, to work for neighbouring parishes, consequently their own landlord will lose the labour of his cottagers, and others will reap the benefit who have no cottages; which would be the greatest discouragement to erecting them.
18. What is the price of the cow?	18. The present price of a cow in my neighbourhood is from eight to ten pounds.
19. What in general is the quantity of milk, butter, or cheese, the value by suckling, &c.? or the total profit of each cow?	19. The quantity of milk, butter, and cheese, must depend on the sort both of cow and pasture: the value by suckling must also depend, I presume, on the time of year the calf drops; but in common the profits of a cow may be estimated at seven pounds per ann. In dairy farms, by the Trent side, the profits are reckoned from eight to ten pounds. If well managed, and near a market town, they are even more.
20. What is done if the cow dies?	20. A new cow may be purchased partly from

Plan of a Cottage, as recommended by L^{d}. Brownlow.

See Page 89.

Fig. 1

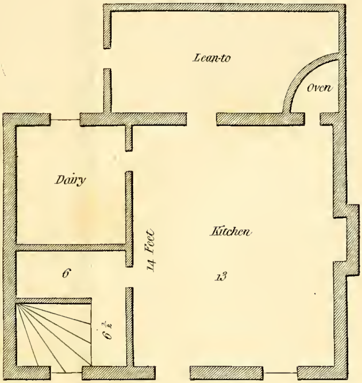
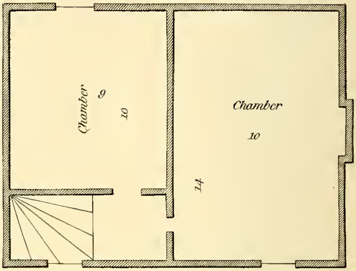


Fig. 2



The Chambers are partly in the Roof w^{ch} is not Hipped but with Gabble ends, the Windows of the Chambers do not break the Roof being up to the Plate but not higher.

Plan of a Cottage, as recommended by M^{r}. Crutchley.

See page 96.

Fig. 4

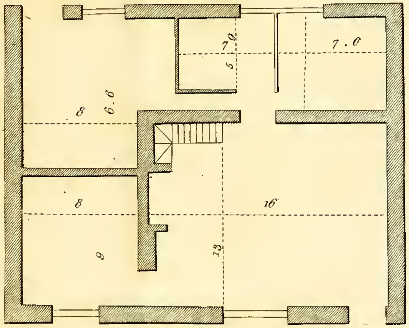
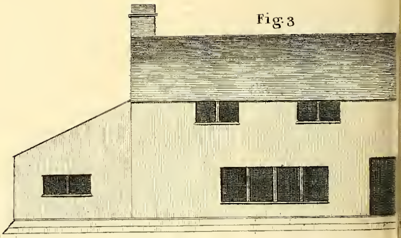


Fig. 3



2 Steps 4 Inches each before the House.

Neele sculp^{t}. S

	past profits, and partly from gathering amongst the neighbours; this pretence to ask charity has been known to be often abused, by begging all over the country, and treble the value of the departed cow obtained.
21. How is the produce sold? is it carried weekly to market?	21. The produce is brought weekly to market, sometimes at more cost of labour and loss of time than the commodity is worth; but butter and cheese may always be sold by cottagers to shops in their own or neighbouring villages.
22. How long has this practice been established?	22. In all open field lordships there have always been pastures in which the cottagers have had their share of benefit; but the practice of enabling cottagers to keep cows in inclosed parishes, is in my neighbourhood rare, and of a recent date.
23. Do they keep pigs? When they do, with what profit?	23. A cottager who keeps a cow always keeps a pig or two; the profit from thence is very considerable, as a pig is maintained, except when fatting, by what would else be thrown away; and a pig bought for 20*s.* at Midsummer, will be worth 3*l.* at Christmas.
24. What is the best form of a cottage?	24. The plan (Plate XXXIV. fig. 1, 2.) as most approving of it, is what I have last built upon. It is taken from Kent's Hints, p. 230, with a little alteration and addition. It is built with stone, covered with pan-tile.
25. What are the conveniences given for baking or brewing, and how disposed to serve several cottages?	25. An oven is built with almost every cottage, and the cottager sets a copper in the chimney corner, which answers for the purpose of brewing as well as washing.
26. What is the expence of building?	26. Expence of building such cottages is estimated in Kent's Hints; but as the common woods, such as elm, lime, and ash, which are often suffered to stand upon estates till they decay, answer for such buildings, the actual expence of building might be less than stated by that author; the amount of which for two cottages built together is 140*l.*; but he does not include pig-sty, or hovel for fuel and cow occasionally.
27. How repaired?	27. By the landlord, or else they will soon go to decay.

For whatever may be defective in the above answers, or for any fresh queries, if such arise, to which I can give or procure answers, it will be the highest gratification to me to be honoured with your commands; for of all things, the system of cottages is that in which I feel the greatest interest, being thoroughly convinced, that there subsists the closest connection of interest between the cottager and the land-owner.

I have the honour to be, Sir,

22 February, 1796.

Your most obedient servant,

BROWNLOW.

To Sir John Sinclair, Bart.
President of the Board of Agriculture.

VII. *On Labourers in Husbandry renting Land. By* Robert Barclay, *Esq. of Urie, M. P.*

It certainly is of great moment, to find some method to enable country labourers to live more comfortably than they do at present, by placing them in a situation where they may acquire some property and subsistence, when they become old, and unable to perform hard work, and that they may not be so subjected to the difficulties which they now undergo in times of scarcity, nor become a burden upon the parishes where they reside; likewise that they may be enabled to keep cows for the nourishment of their children.

Labourers may be divided into two classes, the first of which I shall term *labourers by the piece*; I mean such as work at hedging, draining, hoeing of turnips, cutting hay, and at harvest work; the second class I shall call *labourers by the day*; these are constantly employed by the farmers at ploughing, and other works which require regular attendance.

The first class being only hired occasionally, are employed by different farmers, according to circumstances. These, I think, may have a small portion of tillage land (for which they can afford to pay a reasonable rent), perhaps two and a half acres, divided into five parts (I suppose turnip land); or two acres divided into four parts, or they may have four or five acres, if that quantity shall be thought eligible; I mention a division into *four* and of *five* parts, because in some soils clover remains one season only, in that case the land must be divided into four parts; in other soils it will continue vigorous for two years; the best division in that case is into five parts. In the course of four crops, turnips, barley, clover, and wheat, is the best mode of cropping. In the other case, turnips, barley, clover and a little ryegrass mixed with it, will answer better. The clover may remain two years, and then be ploughed up for wheat. In either case, as soon as the wheat is carried home, the stubbles should be chopped and drove to the farmyard. The land, or part of it, should be immediately ploughed, and sown with rye mixed with winter vetches; these will answer for the cows till the middle or end of July. Then the ground should be ploughed two or three times, and sown with turnips; these will answer well the succeeding spring; and by sowing a part of the land with rye and vetches, which has borne a crop of wheat, the greatest part of the clover can be made into hay, which with turnips, cabbages, &c. that may be raised in the hoed division, will abundantly serve their cows in the winter. To make these courses more intelligible, I have mentioned turnips as the only hoed crop, but I think such labourers ought not to have a garden. A part of the hoed division may be planted with cabbages, potatoes, coleworts, &c. and the remainder sown with carrots and turnips; this substitute will fully answer the purposes of a garden, and will plentifully supply their families with vegetables. Each of these labourers must have a thrashing-floor, and a place for his cow both in winter and in summer. The small portions of land which I have mentioned will not admit of divisions for them to pasture upon. Such labourers being extremely useful to the farmers, will not, I think, find much difficulty in getting their lands ploughed, &c.; I am aware that in some soils clover sown three or four times, in the courses which I have mentioned, will at last fail; if that shall happen to be the case, the manner of cropping must in a small degree be varied. Half of the land which has produced barley the preceding year, may be sown with vetches instead of clover. The same half will, in the next course, produce good clover. This expedient has, in several instances, answered.

The second class of labourers are constantly employed in the service of the farmers, and cannot bestow that attention which is necessary for the management of tillage land; I therefore think it is out of the question for them to have any; I propose that every labourer of that description shall have the eighth of an acre for a garden; and for enabling him to keep a cow in the summer, there may be a pasture field near the cottages. The farmer who employs him, ought to sell hay to him at a moderate price, for the purpose of keeping his cow in the winter. A hovel may be erected for her in some part of the field, or near the cottage, where her *dung* can be collected, which may be given to the farmer. This advantage will lessen the price of hay to the cottager, the refuse of his milk and his garden will enable him to keep a hog, the dung of which, with the ashes, &c. will manure his garden. Rich land, such as Lord Winchilsea's, may be pasture, and cut for hay alternately; in that case the labourer can cut and make his own hay; but still he will be more useful to the farmer, if he shall purchase his hay from him, because then the labourer will be enabled to keep more closely by his work.

VIII. *Answers to the Queries respecting Cottagers renting Land. By Mr.* Crutchley *of Burleigh.*

QUERIES.	ANSWERS.
No. 1. What is the rent of the cottage merely?	No. 1. The rent of a cottage house is from twenty to twenty-five shillings a year.
2. To whom are they let?	2. Generally to the cottager himself.
3. What is the quantity of land allowed for a garden?	3. The quantity of land for a garden to grow potatoes for a family, and feed a pig, is from 25 perches to a rood; the first two years the whole is sown with potatoes. In a few parishes, if the garden contains a rood, the following mode of cropping has been lately adopted. The third year one half is sown with barley and clover, and remains two years before it is broke up again: then the other part is sown with barley and clover; and the crops after that time will be one half, two years potatoes: the other half, one year barley, and the other year clover; this mode of cultivating answers exceedingly well to the occupier.
4. What is the rent of a cottage, with such garden?	4. The rent is in proportion to rent given by the farmers for land out of which the gardens are taken.
5. What is the most profitable culture of it?	5. One half potatoes, the other half cabbage, carrots, and all other sort of vegetables; and so change alternately.
6. What quantity of land is, at an average, allowed for a cow?	6. The quantity of land for a cow is about three acres, half of which is for pasturage for the summer, the other half for hay for winter keeping.
7. At what rent per acre?	7. The above should be land worth 25 shillings per acre.
8. Which is found the best system; to let each cottager a separate field, or a number of them a large field for summer grass, and another for hay?	8. The best system is, for cottagers to have two large fields nearly of the same bigness, which should be mown and grazed alternately; but this mode cannot be adopted in old inclosures, therefore separate fields for some, and two or four fields for the other. Upon

	new inclosures, the mode of two large fields for cottagers should be particularly attended to by men of property; and they ought to be very careful in dividing their estates into farms, so that small farmers and cottagers are not turned out of business; and I believe this is the only real complaint that is made against inclosing.
9. What quantity of hay per cow, do they require for winter?	9. The quantity of hay for a cow for the winter about one ton and a half.
10. How do the cottagers manure their land for hay?	10. Land, if mown every year, about one-fourth in a year is manured; so the whole will be manured in four years, this is dung made from the litter of the cow, calves, and pigs.
11. What other profit, from sheep, or otherwise, do they derive from the land?	11. The land that is pasture for the cow in the summer, two sheep are kept upon it in the winter; the profit arising from the sheep is five shillings, from the tenth of October to the fifth of April.
12. Do they raise any artificial grasses?	12. No.
13. Will this system do for tillage? In what cases would it do? and how is the land to be ploughed?	13. I am fearful it will not answer upon so small a scale.
14. Is a large garden as profitable to a cottager as a cow pasture?	14. No.
15. When cottagers rent land, and keep a cow, has it the effect of raising or lowering the rate of wages?	15. Wages are certainly not raised by labourers having land. I am persuaded they are, in fact, much lowered, if the wages were the same; as a more industrious set of men are employed in labour, and having more of the comforts of life, they are enabled to work harder than common labourers; by this more work is done for the same wages.
16. What are the effects of the system to the cottager, the parish, and the public?	16. The cottager, by which I mean a labourer who keeps a cow, enjoys these comforts of life, that a common labourer has it seldom in his power to procure, namely, milk, butter, cheese, and bacon, (the first of which is seldom to be bought). The difference between a cottager and a common labourer is so much, that I am at a loss for a comparison, except it be that of an opulent farmer to a cottager; where there are a number of them in any pa-

rish, the rates will be low. The public must be benefited by them, there being not a yard of waste land upon any of their premises to be found.

7. What is found to be the best term,—life, lives, years, or at will?

17. Tenants at will.

18. What is the price of the cow?

18. The price of the cow varies according to the value of the land it is kept upon. Land of twenty-five shillings per acre, the cow costs from seven to nine pounds.

19. What in general is the quantity of milk, butter, or cheese; the value by suckling, &c.? or the total profit of each cow?

19. Upon an average three pounds of butter for thirty-six weeks, will be collected from a cow. Valued at nine pence per pound,

	£	s.	d.
equal to - -	£4	1	0
Skim milk for thirty-six weeks, at one shilling and sixpence per week - -	2	14	0
Calf at three days old -		15	0
	7	10	0
Trouble and expences at market	1	0	0
	£6	10	0

By suckling

	£	s.	d.
Two calves ten weeks, each at four shillings per week -	4	0	0
One calf five weeks, at four shillings per week - -	1	0	0
	£5	0	0

Consequently the profit of the cow for one year, by making butter, six pounds ten shillings; by suckling, five pounds.

20. What is done if the cow dies?

20. If the owner is not able to buy another, a subscription is entered into by the farmers and cottagers to buy one.

21. How is the produce sold; is it carried weekly to market?

21. If they feed calves, there is nothing to take to market; but if they make butter, it is carried to market weekly; and if cheese is made, it is carried to market when fit to eat.

22. How long has this practice been established?

22. In this county time immemorial.

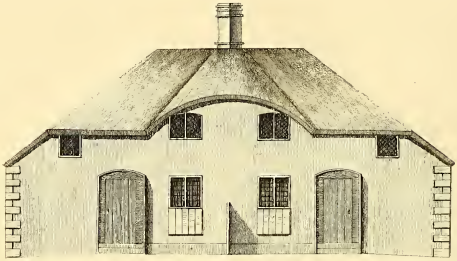
23. Do they keep pigs? When they do, with what profit?

23. If a calf is not fed, the skim milk will keep two pigs, which keep will be worth eighteen pence per week.

24. What is the best form of a cottage?	24. The plan (Plate XXXIV. fig. 3, 4.) of a house, is thought by most cottagers to be the best, from the number of conveniences there are in it. But if this is built with mud walls, with all the little comforts, it will cost nearly forty pounds. *a*, Living room.—*b*, Bed room, lean-to.—*c* Wash house and brewhouse, lean-to.—*d*, Dairy, lean-to.—*e*, Cellar and pantry, lean-to. N. B. There are two sleeping rooms over the living room.
25. What are the conveniences given for baking or brewing? and how disposed to serve several cottagers?	25. A large oven is thought to be the best, and if a quantity of firing were laid in for baking, and paid for in proportion to the number in each family, would lower the expence by using less firing, and the bread much better baked than in a small oven. The conveniences for brewing are set forth in the plan of the cottage.
26. What is the expence of building?	26. Expences of building a house, cow-house, and pig-sty, if mud walls, and thatched, about thirty pounds. Some owners of estates have been so good to build comfortable cottage houses, which cost from sixty to seventy pounds each, and have had the liberality to let them at one pound five shillings a year.
27. How repaired?	27. By the tenant.

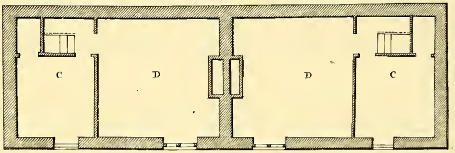
Plate XXXV

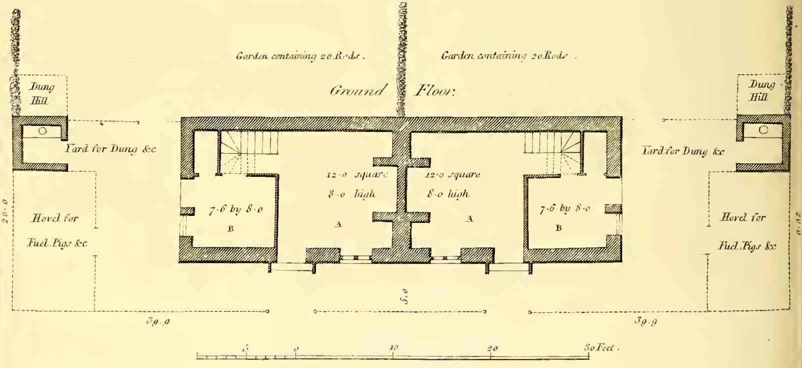
Design for two Cottages of the smallest size.



Extends 45.6

One Pair of Stairs.





Ground Floor:

Henry Holland Arch.t

S. Neele sculp.t 352 Strand.

IX. *On Cottages.* *By* Henry Holland, *Esq. Architect.*

The essential considerations respecting cottages are,

1st. The situation, as the same relates to the level on which they should stand, the soil, and the aspect.

2d. The distribution or plan of the buildings, and the ground allotted to them.

3d. The superstructure, as the same relates to the materials of which they should be built.

4th. The supply of water and fuel, and the application of fuel for the necessary purposes of the cottager and his family.

Upon these considerations depend the health and comfort of a great part of the community: when well understood, they never fail to produce good effects, and when they are not so, the consequence is a careless inattention to the whole establishment, visible in the tattered, miserable condition of so many villages at this time. As expence is certainly not the principal ingredient from which this difference arises, the cause of it must be sought for in some further principles, which it shall be the business of this paper to investigate, and such an investigation, it is hoped, will make it appear that a small expence well directed is sufficient to provide for the comfort of a cottager. In Plate XXXV. a design is given for two cottages contiguous to each other; in each of which the smallest requisite for a family is adopted, because it contains all the principles which should be applied to buildings of any size, and because it is easier to enlarge than diminish the scale of any building for any purpose.

1st. As to situation; this should be a dry spot, not subject to any run of upland water, or springs, or any water liable to become stagnant; in such a situation one small step at the door is sufficient. The soil for the garden should be such, at least, as time and labour may improve to advantage. The best aspect for the front is south-east, and from that point round to the north-west; the rest of the compass towards the west, is strictly and constantly to be avoided. High situations have many inconveniences, and no advantages; low, dry situations have no inconveniences, and every advantage that can be desired.

2d. As to the plan or distribution of the building, and the ground allotted to the cottage. The cottages in the design annexed, Plate XXXV. contain each four divisions, or rooms, two on the ground-floor, and two over them. The first, marked A, serves for "kitchen, and parlour, and all;" it contains the only chimney in the house, which should be large, with a high mantle-piece, so as to admit of sitting under it; the fire to be made on the hearth, and the chimney above the mantle large enough to hang meat or fish to dry. If an oven is required, the mouth of it should open through one of the jambs, and the body of the oven being in the house will have advantages which will be hereafter noticed. The size of the chimney should admit of a pot hanging over the fire, so large as to preclude the necessity of a copper, which, besides its cost, would add an unnecessary consumption of fuel. The division adjoining this room, marked B, serves for a cellar, pantry, dairy, &c. for which purposes it is better that the floor should be sunk about 16 inches, which will not prevent the run from the sink being made above ground, and directed towards the dunghill, or towards the necessary. The next division, marked C, is over the last, and is designed to be a lodging room for children; and the last division, marked D, is designed to lodge the cottager and his wife. The quantity of ground which should be allotted to a cottage of this description admits of much speculation; perhaps it should be regulated by the goodness of the soil, and by considering how much it may be possible for the cottager to cultivate, without injury to the claims of his employer, who purchases his daily labour, and has a right to nearly all that can be done.

3d. With respect to the superstructure, and the materials of which cottages should be built. Here again comfort should be considered; and it will be found that economy and elegant simplicity go hand in hand: the great object is to make the cottage cool in summer, and warm in winter, and to effect this with as small a quantity of fuel as possible, which, perhaps, were it not for cooking, might be totally dispensed with. To obtain fuel, the inhabitants of cottages, as the case now stands, are driven by necessity into the lanes and woods to pick up sticks, driven to a pursuit that is often fatal to them, and always injurious to the neighbourhood. To avoid this necessity as much as possible, let the walls of the cottage, and the covering be thick enough; the walls may be built of the earth or top soil, compressed in moulds,* and should be made at least 20 inches thick. The roof should be covered with thatch, on rafters of young fir, or poles of unsawn timber. Such a building well executed will last half a century, with no other repair than once covering the thatch; and it is obviously and unquestionably the cheapest, and in summer the coolest, and in winter the warmest building that can be erected. If it were necessary to secure such a building from fire, the method described by Lord Stanhope, in his paper read to the Royal Society on the 22d of July, 1778, would be efficacious; but if no more than two cottages join together, if there is not more than one chimney in each, and if there are no furnaces which occasion a strong draught through the fire, it is not probable an accident should happen. For the rest of the materials there needs no other direction, than that they should be the cheapest that offer. The flooring of the lower rooms might safely be of earth, the next best is paving of tiles or bricks; but wood or stone are the worst materials for the purpose. The flooring of the chambers being laid of boards, on what Lord Stanhope calls underflooring, would so far secure the building from fire, and prevent the necessity of any ceiling in the lower story. The sort of walling proposed admits of an outside colouring to imitate stone, which added to the soft and elegant simplicity that always attends good thatching, would make cottages one of the greatest ornaments to the country.

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* This practice has lately been introduced into this country from France, where it is known by the name of Pisé. It consists of throwing the earth in a dry state, into moulds formed for the purpose, and compressing or ramming it together; when it acquires such a solidity, that walls so made will support several stories, and the heaviest weights. The expence of this manner of building, will be seen in the estimate. Should this practice not be sufficiently known or understood, the common one of mud-walling is next to be preferred; both kinds, and indeed the whole of buildings of this sort, should be executed between the ends of May and July.

4th. The supply of water and fuel, and the application of fuel to the necessary purposes of the cottager and his family. Softness is an essential quality of water; hard water may be dispensed with, but soft cannot. Happy are the cottagers who live by the side of a running stream of soft clear water. Next to this, soft spring water is most desirable, and on failure of these advantages recourse must be had to rain water, preserved in tanks, which are covered over, and from which (to prevent the waste of a pump) the water is drawn up by a bucket. A tank 10 feet diameter, and 10 feet deep, arched over, would at an easy expence supply twenty cottages all the year round. The last and worst resources are deep wells, particulalry in clay soil, on which no human or animal being should be made to depend. Plenty of good water is necessary to health and cleanliness, it is therefore to be hoped that no cottages will be built, or be suffered to be built, where this cannot be had.

The next thing necessary to our existence, at least which habit has made us conceive to be so, is fuel, the economy of which, as applied to cottages, is exceedingly plain and simple. Construct the house properly, and a small quantity will do much. The great object to be kept in view is, that of the heat which arises from the fuel consumed, none shall be suffered to escape without use, but that all shall be employed to some purpose or other. If the chimney is large, and the fire made on the hearth, the draught will be very small, and if the shaft of the chimney is continued five or six feet above the highest part of the roof (as was the case in all old buildings), the chimney will not smoke, nor will the air escaping at the top of the chimney convey with it more heat than is necessary to give a proper direction to the smoke. It was observed before, that when an oven is necessary, the body of it should be in the room. This will considerably add to its warmth, and a convenient lodgement for dry stores will be formed above the oven.

Estimate for the Design of one Cottage of the smallest Size.

Building cottages must be attended with more or less expence according to the facility with which materials can be procured, and the price of labour, and in some measure upon the foundation that may be required, and the labour necessary to form the level on which they are to stand; but supposing no extraordinary expence, the estimate will stand thus.

	£.	*s.*	*d.*
17 yards digging the foundation and levelling the ground, at 3*d.* per yd.	0	4	6
160 feet of reduced brick, rough stone, or flint, in the foundation, and one foot above ground, taking an average price, brick will probably be the dearest. When flint or rough stone is to be got, the least expence is to lay it in dry, and run liquid mortar, or as the workmen call it *grout,* to fill the interstices and cement the work. It was thus the old hard walls, of which great remains are still to be seen, were constructed; at 6*d.* per foot, 22 inches thick, - - -	4	0	0
170 feet of reduced brick work to the chimney and chimney shaft, at 8*d.* per foot, - - - -	5	13	4
608 feet superficial of earth or mud walling, 20 inches thick, at 3*d.* per foot, - - - -	7	12	1
1 sq. 66 ft. superficial of flooring to the kitchen, if of earth, at 5*s.* per sqr.	0	8	3
78 feet of flat brick paving, laid dry in the pantry at 3*d.* per foot,	0	19	6
11 ft. 3 inch. of chimney hearth paved with brick an edge in mortar, at 6*d.* per foot, - - - -	0	5	7½
Carried forward £.	19	3	3½

Brought forward £.	19	3	$3\frac{1}{2}$
33 feet of brick foundation to the privy, 9 inches thick, and two feet deep, open towards the dunghill, at 6*d*. per foot, -	0	16	6
15 feet cube in a small brick sink in the pantry, raised 2 feet 6 inches above the floor, the run from it to the yard and privy, at 9*d*. per foot,	0	11	3
16 feet run of brick gutter across the yard, at 3*d* per foot,	0	4	0
46 sqr.$\frac{3}{4}$ of the best reed straw thatching on the house, including roofing of fir poles, or rough unsawn timber, prepared for thatching, at 40*s*. per sqr.	9	10	0
3 square of chamber flooring, timber and boards, at 45*s*.	6	15	0
3 square of underflooring, serving as a security against fire, and a ceiling below, at 20*s*. per square, - -	3	0	0
Mantle, tassels, and inside burn to kitchen chimney,	0	8	0
The staircase, one story, - - -	2	10	0
Three brick steps, with wood nosings from the kitchen to the pantry,	0	5	0
The street ledged door, lintels, locks, latch, hinges, and door-cases,	0	19	6
The inside linings to ditto, - -	0	4	0
* The ledged door, door-case, lintel, hook, hinges, bolt, latch, and inside linings, from the pantry to the yard, - -	1	0	0
The projection on the outside of the street door, intended to shelter it from wind and rain, of boarding covered with lead, -	1	6	0
No. 5. Inside ledged deal doors, hinges, latch, and jambs,	2	10	0
No. 4. Casement windows, solid frames, lintel, lead lights, and inside window boards, - - - -	4	12	0
Outside fall-down shutter and hinges to one window, fastened with a pin and key, - - -	0	6	0
Wood bars to secure the pantry window, - -	0	1	6
Outside painting to the window frames, doors, and shutter, -	1	10	0
Skirting in the kitchen and two lodging rooms, -	3	0	0
A dresser and two drawers in the kitchen, with a shelf over it,	2	10	0
Small dresser and shelf in the pantry, - -	0	7	6
Closet shelves, and two closet locks, - -	0	13	6
Carried forward £.	62	3	$0\frac{1}{2}$

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* This door may perhaps be dispensed with in cottages of the smallest size.

	£.	s.	d.
Brought forward	£.62	3	0½
Lath and plaster to the ceilings of the lodging rooms, and partitions,	1	5	0
Rendering against the walls in the kitchen only, -	0	15	0
The whitewashing in the inside, the colouring on the outside, and forming the rustics, - - -	2	2	0
Completing the privy above the brick foundation, and covering it with thatch, - - -	3	0	0
Building the hovel covered with thatch, inclosed three sides with slabs, leaving an opening (for pitching fuel or straw, &c.) next the street,	8	10	0
Fencing next the street, and small gate, &c. -	2	5	0
Total Estimate for one cottage,	£. 80	0	0½

The fencing to the garden, as well as making it, are not considered, as it must vary considerably in every situation. The supply of water is a sort of general concern, of which it is difficult to say how much will attach to a particular cottage.

This estimate is for a cottage of the smallest size. Perhaps buildings in the country may be thus divided, increasing in size and expence according to the order in which they are named:

Cottage, smallest size, for the labourer.

Second size, for the labouring man who by his skill, and working task work, earns more than the common labourer.

Cottage, third size, for the village shopkeeper, shoemaker, tailor, butcher, and baker.

Cottage, fourth size, for the farmer, maltster, small farmer, alehouse, and trades requiring room.

Cottage, fifth size, for the large farmer, generally called a farm house, suitable to the most improved system of farming, but nevertheless partaking of the general principles already laid down, the expence of all such buildings will depend not only on the facility of procuring labour and materials, but on the economy and management of those who direct, and those who undertake the construction of them. It is not the least merit of the proposed plan, that the cottages of the smallest may be executed with the refuse of greater works, the "crumbs from the rich man's table," and that the materials are nearly all neither taxed or taxable.

X. *On Cottages.* *By* Robert Beatson, *Esq.*

There is no subject better intitled to the attention of so respectable an institution as the Board of Agriculture, than the means of accommodating that useful and truly valuable description of persons, the labourers who are employed in husbandry. I shall therefore take the liberty of submitting to the consideration of the Board some observations on the advantages which the farmer may derive from having their aid in carrying on his operations, and on the construction of the cottages they inhabit.

Nothing is more ruinous to the interests of the farmer, than to keep a greater number of servants than he really has occasion for. Yet in all farms it is necessary there should be a fixed establishment of servants, in proportion to the extent and nature of the farm. Every one above that number, may be considered as a supernumerary, incurring an unnecessary expence of at least fifteen or twenty pounds per annum, which will fall very heavy on the profits of almost any farm. This fixed establishment, however, is by no means sufficient to carry on the whole operations of the farm at all seasons of the year. There are certain times and certain operations that require additional hands; and fortunate is the farmer, who can, on every such occasion, command a sufficient number to expedite and to accomplish his labours. It generally happens too, that when one farmer has occasion for a great many additional hands, all the other farmers in the neighbourhood have the same. How then are his operations, in this case, to be carried on? he must have hands, otherwise he cannot proceed, or at least may suffer a very material loss by delay.

There are only three sources from whence he can expect assistance: from townspeople, if near a town, from villagers, or from cottagers. The townsman considers himself totally independent of, and unconnected with the farmer, consequently whoever gives him the best price, that is, bribes him highest, will purchase his labour; but as it generally happens that those who will accept a bribe, are little to be depended on, high wages, a great bustle, and little work badly executed, are therefore too often the consequence of applying to that source. The villager is also independent of the farmer, although somewhat more connected with him than the townsman. His demands, however, may not be so exorbitant, yet being more accustomed to country labour, he will, no doubt, be of more utility, if he can be prevailed on to give his assistance. But the cottager is the main resource upon which the farmer can best depend; if therefore he is fortunate enough to have several well peopled cottages upon his farm, he will have little to fear from a want of hands on extraordinary occasions.

A ready supply of labourers is not the only advantage a farmer may reap from cottagers. He will have, at an easy rate, all the manure they make, except what they themselves may require for their little gardens; and they will often, perhaps, be the purchasers of several commodities he may have to dispose of, and save him the trouble of carrying them to a more distant market. They will also sometimes have occasion for an additional quantity of ground besides their gardens, for which they will perhaps be enabled to give a better rent than even the farmer himself can make of it by keeping it in his own hands, or than can be expected from those at a distance; for, in general, land is the more valuable to the possessor, the nearer it is to his place of residence, and particularly so to the cottager, who can labour it at his spare hours, or when he is not otherwise employed.

A nation is said to be rich in proportion to its population. So it is in a great measure with an estate, or a farm, for the more numerous its inhabitants, the more easily will it be cultivated and improved. The erection of cottages is therefore an object of great importance to the farmer as well as to the proprietor; but it is necessary for the mutual advantage of both parties, that the landlord and his cottagers should be on the best of terms. That he should regard them as a part of his own family, and that they should look up to him as their best and surest friend and protector. Every cottager should therefore consider that in promoting the interests of his landlord, whether proprietor or tenant of the farm, he is, at the same time promoting his own; for a landlord has it much in his power to serve and oblige his cottagers in various ways, as they themselves must be sensible of. If therefore they show that attachment and preference to his interest, which he has a right to expect, there is no doubt he will do every thing he can to render their situation as comfortable as possible; but as it may sometimes happen, that even the favours he may do them, are not sufficiently binding on people of an ungrateful or refractory disposition, perhaps the most effectual way to secure to himself those benefits he is justly intitled to expect from their residence on his farm, would be to make his rents conditional,* that is, in case they do not give their assistance, when wanted in harvest, or on any other pressing occasion, they should pay so much more, and the farmer or proprietor to have it in his option to remove them at the first term of Candlemas, or Whitsunday, at which time the produce of the preceding crop will probably be removed from the ground they occupy, and their successor will have time to prepare for the ensuing crop. If settled on some such terms as these, the farmer will find it greatly to his advantage, to have as many cottages on his farm as possible, and if he has a long lease, it would even be his interest to assist the proprietor in erecting new ones, either by driving the materials, or otherwise, as they can agree. In every spare corner therefore, if a dry situation, of easy access, well sheltered, and near good water, a cottage should be built, and every encouragement given that can render the cottager and his family happy and comfortable.

In many parts of the kingdom, one great obstacle at present in the way of settling cottagers, is the poor laws as they now stand. Every cottager and his family being supposed entitled to certain claims upon the parish, in which they reside; but this might perhaps be obviated by passing a law, enacting that in future, with certain exceptions and provisions, no cottager or others, shall be entitled to make any such claims; or it might even, in some degree, be fixed by agreement with the cottager, at the time of his taking the cottage, by his entering into an obligation for himself and his heirs to renounce all claims whatever upon the parish.

Such a law, or such an agreement might, in all probability, act as a sort of *stimulus* to industry, and might induce every father of a family, to exert himself, to make some kind of provision for his children or widow, in case of his death. Whereas, at present, by far too many take no sort of pains whatever to do so, being prepossessed with the idea, that if reduced to beggary, the parish will provide for their families at their decease; and, trusting to the poor's funds, when often they have no occasion to do so, they squander away their little pittance at the alehouse, and dissipate all they earn as fast as they receive it.

By some such regulations as these this great obstacle towards erecting cottages might be totally removed, and besides the real necessitous objects of charity, if their funds were properly managed, would be more amply and comfortably provided for, and the poor's rates, at the same time, might be greatly diminished, and that heavy and intolerable burden upon the farmer and the community, would consequently be more easily sustained.

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* At Mr. Bishton's, of Kilsal in Shropshire, his cottagers (most of whom he employs as labourers), pay him six pence per week of rent for their house and garden, which is deducted from their wages every Saturday night; and thus the cottager does not feel the inconvenience of paying the whole at once. Those who do not work to pay him a higher rent. Others think it best to exact their rents at harvest time, when the cottagers have most money at command.

Every cottage should have a small garden annexed to it, sufficient to raise vegetables for the family use. About 25 or 30 perches of ground, properly managed, will answer that purpose. Whatever more land the cottager may have occasion for, he should be dependent on the farmer for it.*

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* The following hints, from the Rev. John Townsend of Pewsey in Wilts, on the advantages of cottagers, not only renting land, but enjoying small freeholds, are worthy the reader's attention.

" Having lived more than thirty years in a country village, I have had innumerable occasions to remark a striking difference between the cottagers, who have a garden adjoining to their habitations, and those who have no garden. The former are generally sober, industrious, and healthy, whilst the latter are too often drunken, lazy, vicious, and frequently diseased. The reason for this difference is obvious, because one fills up all his time with useful labour, whilst the other, for want of occupation, takes refuge in the alehouse, where he dissipates his scanty pittance, and destroys his health.

Another striking difference to be noticed, is between those who have freehold tenements, and their neighbours, who are obliged to rent. In the former we commonly observe that openness and honesty, which are seldom to be seen in men who are destitute of property. The peasant, whose ancestors built a cottage on the waste, with a sufficient garden, and the right of commonage for his cow, if he retain this little patrimony, brings up a numerous family without being reduced to the necessity of asking assistance from his parish. This man acquires habits of sobriety and industry, and his property is a pledge to the community for his good behaviour. These good qualities are transmitted to his offspring; and when his children go out to services, they, like their parents, are distinguished for ingenuous conduct; they resemble the sons of freemen, whilst the immediate descendants of those, who have no freehold, too frequently have all the dispositions of a slave.

Commons, it must be acknowledged, if not stinted, starve all cattle; and though stinted, yet cannot be improved, like land that is in severalty. They have this advantage to the poor man, that his property is inalienable, and must descend from the father to his son. Commons, however, should never be admitted in a well regulated state, and when divided, the rights and interests of the cottager should be particularly attended to.

The cottage law of Queen Elizabeth, which required that four acres of land should be attached for ever to each cottage, precluded the necessity of commons. This statute has been repealed. Four acres of land were too much for the spade, and too little for the plough, and therefore it was wise in the legislative authority, at a time when pasture gave place to tillage, to abrogate this law. Yet, perhaps, it would have been more advisable merely to have lessened the quantity of land required for each cottage, than to have dropped this provision altogether.

There are different sorts of cottages, which require different constructions. Cottages of one, two, and three rooms. Some add cottages of four rooms, but these are seldom built, and are more in the style of houses of a superior kind. There are also cottages for the labourer, and for the mechanic of different trades, as carpenters, smiths, weavers, &c. each of whom would require a dwelling of a different construction.*

These different kinds of cottages may be divided into two classes, the plain, and the ornamental, but it is the former only we mean to treat of here. The latter being built chiefly as pleasing objects in different points of view, from the parks or pleasure-grounds of noblemen and gentlemen of fortune. On these, a considerable expence is sometimes bestowed; and when executed and disposed with taste and judgment, they afford the most pleasing variety. Of this kind, the completest I have seen are at Lord Penrhyn's, in Cheshire, whose cottages are disposed with great taste, and adorned with surrounding clumps of planting, each having a pretty little plot of garden ground and shrubbery in front, and some with honey-suckle and jessamine beautifully entwined round the porch and windows. The insides of these are equally delightful with the outside, being kept so excessively neat and clean, that it is a pleasure to view them.

At the Earl of Winchilsea's, in Rutlandshire, are also some very neat cottages,

At the present moment, when it is in contemplation to improve the wastes, and to inclose all commons, would it not be prudent to allot a certain portion of land, perhaps one-eighth of an acre, to each cottage, with a provision, that this little property should be inalienable, and rather go to the most distant relation, than to one who is possessed of land?

Such a provision has been made by Spain in the new settlements of the Sierra Morena, and is found beneficial to the public.

Even in parishes, which have already laid all their common lands in severalty, without making the provision here recommended for the poor, might it not be advisable to give every cottager employed in agriculture, the same quantity of land, on the same conditions as above?

A parish containing three thousand acres of arable and pasture, in proportion to each other, may be cultivated by one hundred families, who according to this proposal would require only twelve acres and a half of land to make them happy. This, at 40*s.* per acre, would cost the parish only 25*l.* per annum, whilst in cabbages, carrots, and potatoes, it would produce the value of more than 300*l.* a year, which produce, would undoubtedly relieve the poor rates to the same amount.

The West India planters have adopted a plan somewhat similar to this, and derive from it the most substantial advantages; for by this they encourage industry, and in the most agreeable manner induce their slaves, by strenuous exertions, to derive profit from every moment of their time."

* See Practical Treat. on Rur. Imp.

kept in excellent order, but his lordship has been at a considerable expence in erecting them.

The plain and simple cottage for the labourer, being the chief object at present under consideration, we shall therefore endeavour to point out the most commodious and best construction for that sort of cottage, and the cheapest manner of executing them.

It is found that an apartment 12 feet square, is sufficiently large for a labourer and his family to eat in, and to hold besides all the furniture and utensils necessary therein. One sleeping apartment over that, partitioned in such a manner as to be most convenient to the family, and least offensive to decency at particular times, will constitute all the lodging required in a simple cottage. Upon these principles the following general rule for the construction of a small cottage may be laid down. Let fig. 1. Plate XXXVI. represent the ground plan. 12 feet wide from A to B, and 16 feet long from B to C, within walls. From the length take 4 feet, CD, which will leave an apartment ABDE 12 feet square, and a space DEFC 4 feet by 12. Divide this space in two equal parts by the line GH. In one of these parts, will be a stair to the upper apartment, and under it a small closet or cellar. The other part will serve for both a pantry and a milkhouse. The upper chamber to be divided as shown in the annexed plans.

The 4 feet space DEFC, taken off the length, may either be on the one end or the other; in a single cottage it matters not which. But as there ought always to be at least two cottages built together, being, besides other advantages, considerably less expensive in proportion than building them singly, that space ought, in my apprehension, to be taken from the extreme ends, by which the vents will be got in the middle wall that separates the two cottages.

In most of the modern cottages I have visited (although many of them, perfect in every other respect), the general complaint seemed to be, that the upper chambers were so excessively hot in summer, and so very cold in winter, they were scarcely habitable. This is owing to the thinness of a slate or tile roof, and to those chambers being so far within the roof. A proper thatched roof is therefore the best preventative of this evil, where there are upper chambers. If the roof is of tile or slate, which is by far the neatest and the most durable, the ceiling should be lathed and plastered, and air-holes with shutters, so contrived that they may easily be opened or shut at pleasure, to give air to the whole roof in hot weather, which will tend greatly to keep the

Curious Stair:

Page 109.

Vide Page 108.

Fig:1

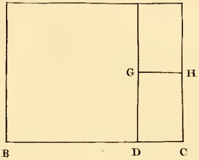
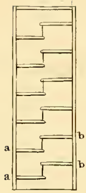


Fig:2



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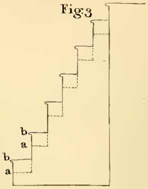


Small Cottages.

Page 112.

Fig:4

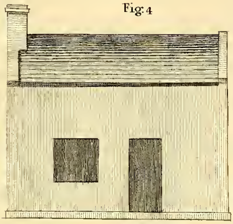


Fig:7

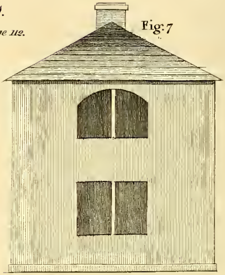


Fig:5

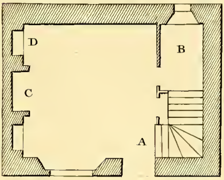


Fig:8

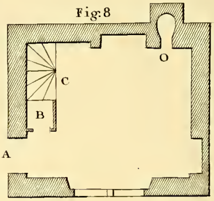


Fig:6

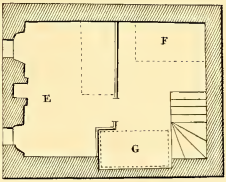
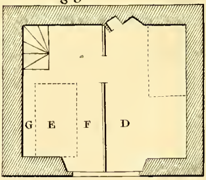
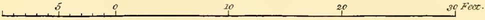


Fig:9





R.Beatson delt

Neele sculpt Strand

upper chambers cool in summer. Even a white sheet thrown over that side of the roof most exposed to the sun, or the roof itself whitened, will have also the same effect.

In winter, if the angle in the roof is filled with straw, it will probably prevent the cold penetrating so easily.

To save fuel is certainly a material object to a cottager; and as it would be attended with a considerable additional expence to him, to keep a fire in the sleeping apartment above, as well as below, if a method can be devised, to give the upper apartment some benefit from the fire below, it would surely be of great advantage in cold weather. This might, no doubt, be done by a flue, but some benefit will be derived from the vent being in the middle of the building, particularly if this vent is made as thin as possible where it passes through the upper chamber. If that part of it were made of plate iron, or such as is used in stoves on board of ship, it would add considerably to the warmth of the room. There is still another way that occurs to me that would have a good effect. In all apartments kept warm by a fire, it will be found that the air at the ceiling is considerably warmer than the air below. If, therefore, in a cottage that warm air is permitted to ascend to the apartment above, it is natural to suppose it will render that apartment considerably warmer. This may be accomplished, either by means of sliding hatches, or by gratings in the least frequented part of the floor, made so as to open or shut easily when required. These methods of warming and cooling the upper chambers in cottages, have probably never been tried, and are perhaps new; they may therefore be improved upon. At all events, they are at least worthy of being mentioned, if they can in any degree contribute to the comfort of the cottager.

As every little space is of consequence in a small cottage, in order to make the stair within take up as little room as possible, there is a curious and uncommon contrivance in a cottage belonging to a very respectable gentleman in Cheshire. The stair in this cottage occupies only one half the space in ascending that a common stair does, as will be evident by the following explanation of it. Fig. 2. Plate XXXVI. is a front view of the steps; the width from C to D is 2 feet 5 inches; *a* is the first step, 7½ inches high, upon which the left foot is put; *b* is the step for the right foot, 7½ inches higher, but in the same line with *a*. The left foot is set on *a*, and the right foot on *b*, alternately to the top of the stair. It is therefore clear, that as the steps for the right and for the left foot are in the same line, and although neither foot rises each time higher than $7\frac{1}{2}$ inches, yet every time that one foot or the other is moved, it rises 15 inches higher than it was before, as will be more evident from the side view, fig. 3. in which the dotted lines show the left foot steps, and the whole lines the steps for the right foot. Suppose, in a stair of this kind, that each tread, or breadth for the foot is 9 inches, and that each rise of the one foot above the other is $7\frac{1}{2}$ inches, as in the figures; consequently as each foot rises the height of two steps, or 15 inches, every time it is moved, it is plain that six steps of this kind will rise as high as twelve in the common way, and will require only one half the size of a hatch or opening in the floor above, that would be required for those twelve steps as usually constructed. This will be of considerable advantage, where much is required to be made of little room, and will of course give more space to the chambers above.

In small cottages, where there happens to be a large family, a great deal of inconvenience often arises (especially when there is a mixture of boys and girls) in accommodating them with decency. This may be in a great measure remedied, by a different mode of disposing the beds from what is commonly followed. The method I would propose, is, to have one bed over another. Where it is thought proper to keep the boys separate from the girls, the entry to the boys' beds may be on one side, and to the beds for the girls on the other side, which will keep them as completely separate as if they were in two different apartments, as will be shown afterwards in the annexed plans.

It has already been mentioned, that two cottages ought always to be built together. To this it may be added, that every cottage should have an upper as well as a lower apartment. This latter opinion is differed from by many, but my principal reasons for recommending it are, because I conceive that upper apartments are more wholesome to sleep in than ground floors; and, as the most expensive part of a cottage is generally the roof, a great deal of roofing will be saved by building one apartment over the other, and some walling besides.

The least expensive way to build cottages will be according to the nature of the materials on the spot. If plenty of stone is at hand, it will not only be the most substantial, but the cheapest material. Brick cottages are the most expensive of any. There is a method of building with earth, which, if properly executed, stands extremely well, and is very cheap. Almost any sort of strong loamy soil answers the purpose. If the soil is light or sandy, a little clay may be mixed with it; but clay itself is not so much esteemed for this kind of work, as it does not ram sufficiently hard, and is very apt to crack when drying; for the stability of this sort of wall depends greatly on being very hard rammed with a cast iron rammer.*

At Scarsbrick hall, in Lancashire, there is a garden wall built in this manner. Mr. Ecclestone has also built an addition to his house, two stories high, in the same way. They are very well executed, and the surface so even and smooth, that when rough cast, or white-washed, they cannot be distinguished from the finest stone wall. If carefully executed, these would make excellent and cheap walls for cottages.

Another method of building earthen walls, practised, I believe, in some parts of Cornwall, is to take any sort of strong earth fit for making bricks; build the walls with it of the intended height and thickness: let them stand some time to dry; then fill within and round the outside with any sort of brushwood or combustibles, and set fire to them. It is said that when properly burnt, this makes a wall like one solid brick. The doors and windows are cut out afterwards, and the vents built of stone or brick.

The Earl of Winchilsea was recommended by an architect to build a house with *unburnt* bricks. His lordship, ever ready to try any experiment, or to encourage any project that may be useful to society, did so; but the house very soon tumbled down. If his lordship had adopted the Cornish method of filling it, and surrounding it, after the walls were built, with combustibles to set on fire, perhaps the house might have stood equally well as the burnt earthen walls in Cornwall. In this case, however, it would probably be better to lay the bricks in soft well beaten clay than in mortar.

The cheapest sort of roof commonly used is thatch, and the best sort of thatch is a species of strong reed, found in some counties. The Earl of Winchilsea has some sheds and farm buildings covered with reed of this sort, which makes an excellent roof, and has lasted many years.

There is still a cheaper kind of roof, but very little known. That is a brown paper roof, well pitched. This makes an excellent light roof for many purposes, if properly executed.† In the town of Dunfermline, in the county of Fife, is a church with a roof of this kind, which has lasted near fifty years, with very little repair, excepting a new coat of tar every six or seven years. This church is 70 feet long, and 50 feet wide, without any intermediate support for the roof, of which the whole original expence of papering and tarring amounted only to 14*l*. A very cheap covering, surely, for so large and so wide a building.

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* For a particular account of this method of building, see Pract. Treat. on Rural Imp.

† Ibid.

The deal flooring is another expensive article in erecting a cottage. In many places a great saving may be made in the expence of this, by adopting the plaster floor, recommended in a paper given to the Board on farm buildings. This kind of floor would answer remarkably well for a cottage; and being more retentive of heat than deals, might tend to keep the upper chamber warmer in winter, by attracting the heat of the fire below.

The following are plans and elevations of the most simple kind of cottage for the labourer, on the principles here laid down. Their roofs are represented as of slate, being by far the neatest. Their external appearance may be varied in different ways, according to the situation where they are built, which ought always to be attended to, for what will have a good effect in one place or point of view may not be so pleasing in another; but this will depend greatly on the taste and fancy of the builder.

EXPLANATION OF PLATES XXXVI. XXXVII. XXXVIII.

Plate XXXVI. fig. 1, 2, and 3, already explained.

Fig. 4. Elevation of a small cottage.

Fig. 5. Ground plan of the same cottage. A the stair with a small closet under it; B the pantry, or milkhouse; C the fire place, which may have an oven at the side D if required.

Fig. 6. Plan of the chamber floor. E the apartment for the man and wife; F a bed for girls; G bed for boys.

Fig. 7. Elevation of another small cottage.

Fig. 8. Ground plan of the same cottage. A the door; B pantry; C the stairs; O an oven, requiring a small projection without the wall, which must be properly covered to keep out wet.

Fig. 9. Chamber floor of the same cottage. D apartment for the cottager and his wife; E two beds, one above the other. The entry to the bed below for the girls being at F, and the entry to the bed above for the boys being on the side G. By making beds in this form, even with the entry to both on the same side, a large family may be accommodated in very little room.

Plate XXXVII. fig. 1. Elevation of two cottages together, with the vents in the partition wall betwixt them.

Fig. 2. Ground plan of these two cottages. AA stairs to the upper chamber; BB pantries, or milkhouses; CC ovens.

Fig. 3. Chamber floor, showing different ways of placing the beds. D apartment for the

Double Cottage.

Vide Page 112.

Fig. 1.

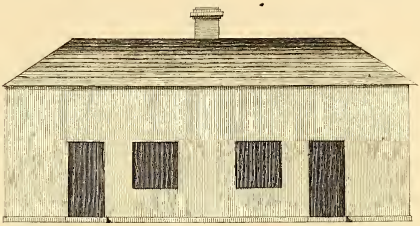


Fig. 2.

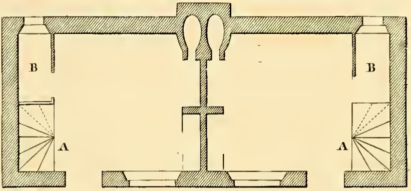
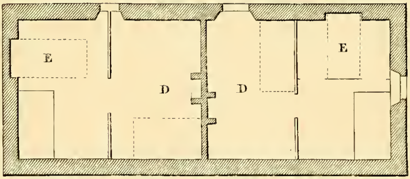
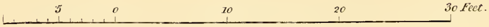


Fig. 3





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XI. *On Cottages. By* A. Crocker *and Son, Land Surveyors, Frome.*

A BILL for inclosing the waste lands of the kingdom having been introduced into the House of Commons, under the auspices of the Board of Agriculture, and as so beneficial a bill cannot fail, sooner or later, to pass into a law, and as in consequence thereof, many small houses must necessarily be built, suited to small estates issuing out of allotments of such wastes, we have been induced to submit to the consideration of the Board three plans of such small houses; to be built of different species of materials.

The first is with mud walls, composed of soft mire and straw, well trodden together, and which, by degrees is laid on, *stratum-super-stratum*, to the height required; a species of building not uncommon for cottages, and even for better houses, barns, &c. in the western and some other parts of the kingdom. It is the cheapest habitation that we can construct, and is also very dry and comfortable.

The second has generally a footing of stone wall, two feet high, on which is placed a strong sill of timber; to which is superadded uprights of quartering, two feet apart, into which are inserted rounds of rough wood, like ladder-work, at six or seven inches one above the other, to the height required: the spaces between the rounds are well filled with a mixture of mire and long straw, previously well trodden together, provincially called *cab-dab*; the whole is then plastered with good mortar, and rough casted. These kinds of buildings are used where stones are scarce, or where cheapness is the leading object.

The third is built with rough stone masonry, and sometimes stuccoed over; and although it is more expensive than the others, yet it is the strongest and most desirable of any, where materials are to be had without great expence of carriage.

Plate XXXIX. fig. 1. is for a small cottage, built with mud walls; which, with a floor of earth, well rammed, may be erected (of the dimensions given), for the small expence of 27*l*. The chambers of which may be lighted at the ends.

Fig. 2. Is for a cottage on a larger scale, which may be built of cab-dab, at the expence of 58*l*.

by Mr. Crocker. Vide p.114.

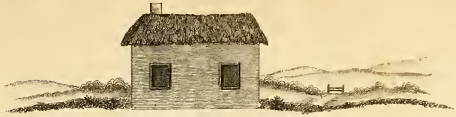
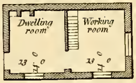


Fig. 1



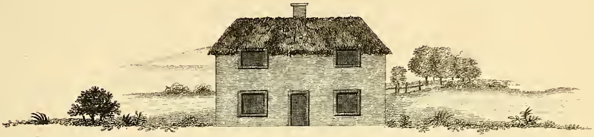
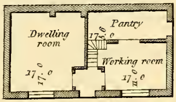


Fig. 2



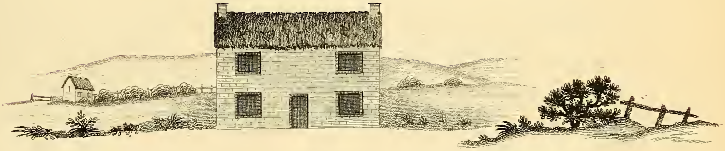
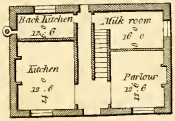


Fig. 3



Scale of Feet

A. Crocker del.

Neele sculpt. 352 Strand.

Fig. 3. Is for a dwelling house, suited to various purposes, which may be built of rough masonry, at the expence of 96*l*.*

Frome, 12*th* May, 1796.

* The late Mr. J. Wood of Bath, architect, in a work intitled " a Series of Plans for Cottages, &c." Printed by Taylor, 56, Holborn, has thrown much light on the construction of habitations for labourers, and has laid down the following seven principles, as the means of obviating any inconveniences to which cottages, as usually built, are liable.

1st. The cottage, he observes, should be *dry and healthy*; this is effected by keeping the floor sixteen or eighteen inches † above the natural ground; by building it clear of banks, on an open spot of ground, that has a declivity or fall from the building, by having the rooms not less than eight feet high; an height that will keep them airy and healthy; and by avoiding having chambers in the roof.

2dly. *Warm, cheerful, and comfortable.* In order to attain these points the walls should be of a sufficient thickness (if of stone, not less than sixteen inches; if of brick, at least a brick and a half) to keep out the cold of the winter, or the excessive heat of the summer. The entrance should be skreened ‡ that the room, on opening the door, might not be exposed to the open air, the rooms should receive their light from the east or the § south, or from any point betwixt the east and the south; for if they receive their light from the north, they will be cold and cheerless; if from the west, they will be so heated by the summer's afternoon sun, as to become comfortless to the poor labourer after an hard day's work; whereas, on the contrary, receiving the light from the east or the south, they will be always warm and cheerful; so like the feelings of men in a higher sphere, are those of the poor cottager, that if his habitation be warm, cheerful, and comfortable, he will return to it with gladness, and abide in it with pleasure.

3dly. *Convenient*; by having a porch or shed, to skreen the entrance, and to hold the labourer's tools; by having a shed to serve as a pantry, and store place for fuel; by having a privy ‖ for cleanliness and decency's sake; by a proper disposition of the windows, doors, and chimneys; by having the stairs, where there is an upper floor, not less than *three feet* wide; the rise or height not more than *eight inches*, and the tread or breadth not less than *nine inches*; and lastly, by proportioning the size of the cottage, to the family that is to inhabit it; there should be one lodging room for the parents, another for the female, and a third for the male children: it is melancholy to see a man and his wife, and sometimes half a dozen children, crowded together in the same room, nay often in the same bed; the horror is still heightened, and the inconveniency increased, at the time the woman is in child-bed, or in case of illness, or of death; indeed whilst the children are young, under nine years of age, there is not that offence to decency, if they sleep in the same room with their parents; or if the boys and girls sleep together, but after that age they should be kept * apart.

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† For want of this precaution, I have always observed, that in wet summers and throughout the whole winter, the walls sucked up (if I may be allowed the expression) the water, and are damp for at least a yard high; and this happens not only where the walls are thin, but even in buildings where they are thick.

‡ This circumstance must be particularly attended to, in those rooms where there is intended to be a bed.

§ At first view this nicety may appear trifling, but on mature deliberation will prove of very material consequence.

‖ This convenience will answer many good ends, but in nothing more than being an *introduction to cleanliness.* In the account of the Voyage to the South Sea, published by Dr. Hawkesworth, speaking of the inhabitants of New Zealand, is the following passage; " In personal delicacy, they were not equal to our friends at Otaheite, for the coldness of the climate did not so often invite them to bathe, but we saw in them one instance of cleanliness, in which they excelled them, and of which perhaps there is no instance in any other Indian nation, every house, or every cluster of three or four houses, was furnished with a privy, so that the ground was every where clean." What a reflection is this on the greatest part of the inhabitants of Britain, to be exceeded in neatness in any

4thly. Cottages should not be more than *twelve* feet wide in the clear, † being the greatest width that it would be prudent to venture the rafters of the roof with the collar pieces ‡ *only*, without danger of spreading the walls; and by using collar pieces, there can be fifteen inches in height of the roof thrown into the upper chambers, which will render dormer windows § useless.

5thly. Cottages should be always built in *pairs*, either at a little distance from one another, or close adjoining, so as to appear one building, that the inhabitants may be of assistance to each other, in case of sickness or any other accident.

6thly. As a piece of economy, cottages should be built strong, and with the best of materials, and these materials well put together; the mortar must be well tempered and mixed, and lime not spared; hollow walls bring on decay, and harbour vermin; and bad, sappy timber soon reduces the cottage to a ruinous state; although I would by no means have the cottages fine, yet I recommend regularity, which is beauty; regularity will render them ornaments to the country, instead of their being at present disagreeable objects.

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one point, by that barbarous race of people the New Zealanders? I could mention many large and opulent towns, particularly on the sea coasts, nay some large cities, where there is scarcely such a convenience in the whole place, for want of which the streets are perfect jakes; to the annoyance of both inhabitants and strangers.

* I am aware that the statute of the 5 Eliz. concerning the apprenticing poor children, and compelling adults to go out to service, will be here objected to me; but the objection soon vanishes when we consider, first, that it may be policy, in many cases, to let the children live at home with their parents till they are grown up, particularly in the manufacturing countries; where the trade of the father will be more carefully taught the children, whose earnings often, nay generally, contribute to the better maintenance of the family. Secondly, the power given to the parish officers by that act, is very much circumscribed, and is confined merely to their own parishes; indeed they may, if they can find proper masters in other parishes, bind out their orphan poor, and the children of such poor as are willing to part with them; but this must be done by consent of the magistrates, who should be very careful how they take the burthen off from one parish, and lay it on another.

† Twelve feet is a width sufficient for a dwelling, that is to be deemed a cottage; if it be wider, it approaches too near, to what I would call a house for a superior tradesman; besides, it would require longer and stronger timbers, girders to the floors and roof, and consequently greatly enhance the expence; a circumstance one would wish in all buildings to avoid.

‡ A collar piece, is that piece of wood which ties the rafters together at some height above the wall plate, and is generally tailed into the rafters.

§ Because the room being six feet and ten inches high to the top of the wall plate, there will be sufficient height to make a window in the side wall, under the plate.

7thly. A piece of ground should be allotted to every cottage, * proportionable to its size; the cottage should be built in the vicinity of a spring of water, a circumstance to be much attended to; and if there be no spring, let there be a well.

On the foregoing seven principles, I recommend all cottages to be built; † they may be divided into four classes or degrees: first, cottages with one room; secondly, cottages with two rooms; thirdly, cottages with three rooms; and fourthly, cottages with four rooms. Mr. Wood has given plans of each of those kinds of cottages, which have great merit in the form of their construction.

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* This will hold good in the country, where ground is not of so great a value, but in towns we must be content with a small outlet behind.

† I cannot more properly than in this place observe, that near Dorchester, in Dorsetshire, there has been lately erected a row of cottages for the accommodation of adjoining farms, in which there has not been the least attention paid, either to the principles of sound building, or to decency or conveniency. The entrances are from the west, and not skreened; the windows are to the same point, the cottage is 17½ feet wide in the clear, and the whole triangular space of the roof occupied as a chamber. The consequence is, that the walls, which have not been built more than three years, are already considerably spread, and must in a short time fall down; the poor inhabitants told me that they could scarcely support the heat of these rooms in the summer, and that they were quite frozen in the winter. The indecency of one chamber for a large family is here very striking; and what adds to the shamelessness of it, was the partitions between house and house being nothing more than thin rough boards, not jointed; and yet the rent paid for each cottage is 52*s.* a year. It is a pity that gentlemen, who build cottages for the accommodation of their labourers, did not study stability for their own sakes, and conveniency and decency for the sake of the inhabitants; for, believe me, the poor man wishes for conveniency, but knows not how to remedy himself, and would be decent, was it in his power.

ERRATA.

Page 15, line 3, for *letticed,* read *latticed.*
—— 19, — 21, for *the deal,* read *thin deal.*
—— 24, — 9, for *follows,* read *follow.*
—— 25, — 18, insert *Plate XIV,* before *fig.* 6.
—— 44, — 9, for *it is confined,* read *this practice is confined.*
—— 45, — 5, for *the shovel,* read *a shovel.*
—— 50, — 5, for *farm of any, and,* read *farm of any size, and,* &c.
—— 53, — 7, for *herst framing,* read *hirst framing.*
—— 54, — 1, for *of the houses,* read *of houses.*
—— 54, — 7 and 8, for *three hoppers; e e e,* read *three hoppers e e e.*
—— 54, — 16, for *hopper,* read *hoppers.*